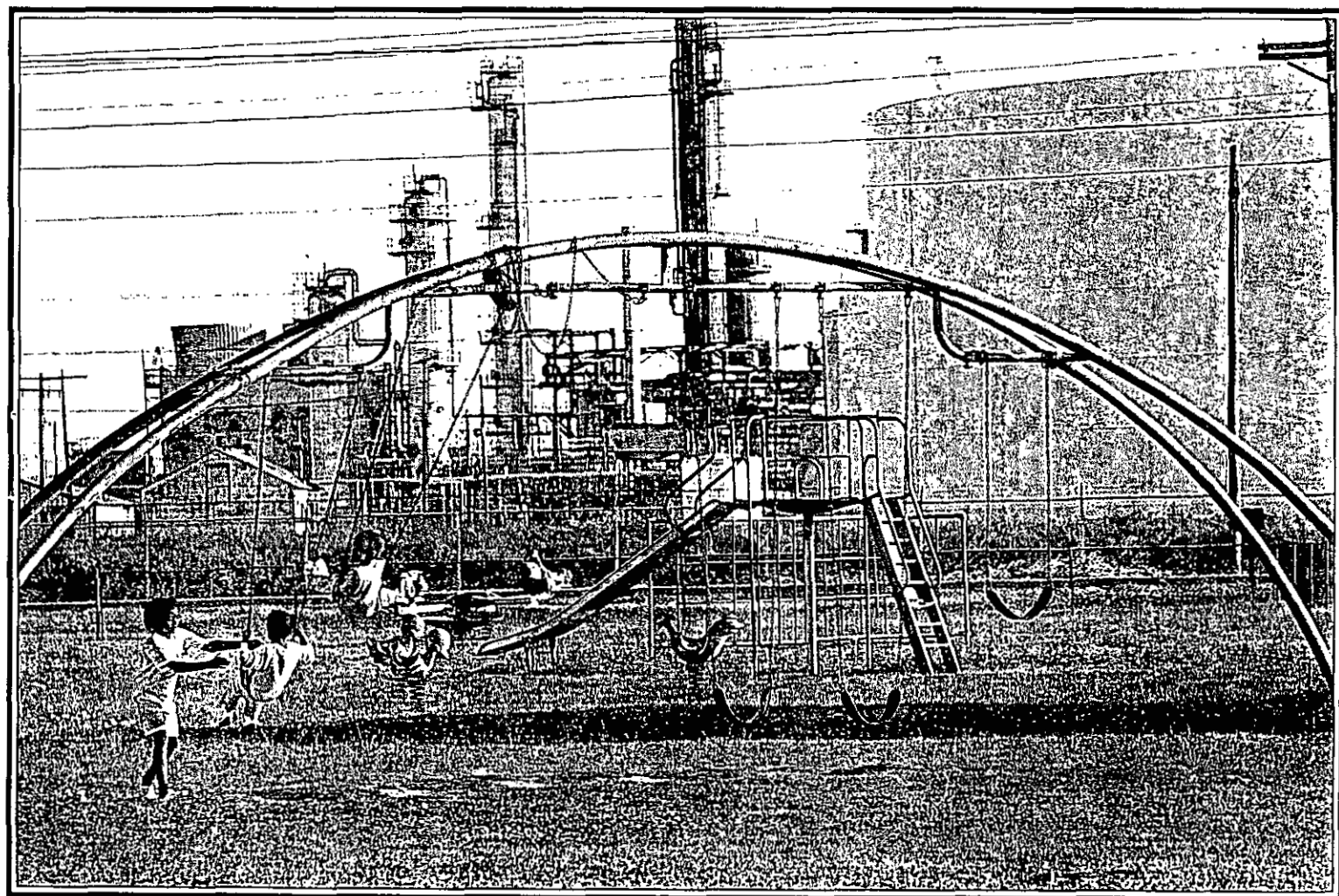




Environmental Equity

Reducing Risk For All Communities



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Volume 1: Workgroup Report To The Administrator



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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

May 29, 1992

Mr. William K. Reilly
Administrator
U.S. Environmental Protection Agency
Washington, D.C. 20460

Dear Mr. Reilly:

In July of 1990, you established the Environmental Equity Workgroup. You directed the Workgroup to review the evidence that racial minority and low-income communities bear a disproportionate environmental risk burden. You asked the Workgroup to make recommendations for Agency action on environmental equity issues. The following report contains a summary of the information collected and the Workgroup's recommendations.

The literature relating environmental risk to race and income is limited although highly suggestive. It spans a wide spectrum of environmental problems and population groups exposed. The evidence indicates that racial minority and low-income populations are disproportionately exposed to lead, selected air pollutants, hazardous waste facilities, contaminated fish tissue and agricultural pesticides in the workplace. The extent and nature of the problem may not be known in every case, but EPA can help lead the way in clearly defining the problems.

The report is the final product of a collective effort by many individuals and offices across the Agency. It is a first step. We welcome and encourage public debate on the report and the issue. Any effort to address environmental equity issues effectively must include all segments of society: the affected communities, the public at large, industry, people in policy-making positions and all levels and branches of government.

We have been delighted and inspired by the enthusiasm and attention that environmental equity issues have received. Concern for the issues has come from a diversity of people and institutions, both within and outside the Agency. Diversity spawns the innovative and effective solutions needed to address this complex and engrained problem.

Sincerely,

Robert M. Wolcott
Chair
Environmental Equity Workgroup

Warren A. Banks
Special Assistant
Office of the Administrator

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1.0 INTRODUCTION

Over the past twenty years, the Environmental Protection Agency has made considerable progress in protecting and cleaning up the environment. Many forms of air pollution are significantly reduced, many surface water systems have shown dramatic recovery, and hazardous waste is better managed and contained. Although the successes are considerable, so are the remaining problems.

Traditionally, many environmental programs at all levels of government have set universal standards for individual pollutants emitted by specific types of sources with the goal of protecting the environment and all people. Recognizing that not everyone is affected in the same ways by pollution, these standards have often been set to protect the most vulnerable, such as asthmatics or pregnant women.

Out of this initial strategy a new approach to environmental protection has emerged. The EPA Science Advisory Board, in its report *Reducing Risk: Setting Priorities and Strategies for Environmental Protection*, urged EPA to target its environmental protection efforts based on the opportunities for reducing the most serious remaining risks. Thus, the next refinement to environmental protection is to examine which environmental problems pose the greatest risks nationwide to human health and the environment, and to begin targeting new efforts on these problems.

In targeting its protection efforts to reduce the most serious risks, the Agency has begun to examine how the patterns of environmental problems converge on different places, how the people who live in those places are affected, and how environmental programs should be refined to address identified differences. A community surrounded by multiple sources of air pollution, ringed by waste treatment facilities and landfills, and whose residences contain lead-based paint clearly faces higher than average potential environmental risks. It is in this context that concerns have been raised about the relative risk burden borne by low-income and racial minority communities. Examination of these differences in risk burden and how government agencies respond is known as *environmental equity*. Although there are many types of equity, this report focuses on racial and socioeconomic equity.

With these concerns and objectives in mind, in July 1990, EPA Administrator William K. Reilly formed the Environmental Equity Workgroup with staff from offices and regions across the Agency. Administrator Reilly charged the Workgroup with four tasks:

- Task One:* Review and evaluate the evidence that racial minority and low-income people bear a disproportionate risk burden.
- Task Two:* Review current EPA programs to identify factors that might give rise to differential risk reduction, and develop approaches to correct such problems.
- Task Three:* Review EPA risk assessment and risk communication guidelines with respect to race and income related risks.

Task Four: Review institutional relationships, including outreach to and consultation with racial minority and low-income organizations, to assure that EPA is fulfilling its mission with respect to these populations.

To perform these tasks, the Workgroup formed seven subgroups: Health Effects Subgroup, EPA Programs Subgroup, Risk Assessment Subgroup, Risk Communication Subgroup, Outreach Subgroup, Regional Perspectives Subgroup, and the Equity Analysis Subgroup. Two other subgroups were formed later in the process: The Implementation Subgroup (focusing on the implementation of the report's recommendations), and the Native American Tribal Issues Subgroup.

The report consists of two parts. The first part -- the main body -- gives the background and context of the Workgroup, defines the issues, and summarizes the Workgroup's findings and recommendations. The second part -- this document -- is the supporting document to the summary report, contains the complete findings of the subgroups. The supporting document is designed to be read along with the main body of the report, not as a separate document. Some repetition of findings and recommendations between the main body, this document, and subgroup reports occurs. This supporting document also includes expanded examples of regional equity efforts, including projects not discussed in the summary report.

A NOTE ON TERMS

The terms used to describe racial population groups are continually changing. The United Church of Christ's *Toxic Waste and Race Report* defines "minority populations" to include: Blacks, Hispanics, Asian/Pacific Islanders, American Indians [and Alaskan Natives] and other "non-White" persons (UCC, 1987). However, other terms are also in use today. In this report, Black and African American are used interchangeably, as are Hispanic and Latino, and Indian and Native American. To avoid misreporting research, where studies are discussed in this report, the original classifications are retained. In charts where information is not provided for all racial groups, it was absent from the original studies. Furthermore, this report follows the common practice used in demographics: "race" differentiates among population groups based on physical characteristics of a genetic origin (i.e., skin color), and "ethnicity" refers to differences associated with cultural or geographic differences (i.e., Hispanic, Irish).

The term used in this report to describe the equitable distribution of environmental protection benefits is also the subject of considerable debate. Environmental equity, as described above, refers to the distribution and effects of environmental problems and the policies and processes to reduce differences in who bears environmental risks. An alternate term is environmental justice. Some use the term environmental racism to refer to disproportionate environmental risks in racial minority communities (Rees, 1992).

EPA chose the term environmental equity because it most readily lends itself to scientific risk analysis. The distribution of environmental risks is often measurable and quantifiable. The Agency can act on inequities based on scientific data. Evaluating the existence of injustices and racism is more difficult because they take into account socioeconomic factors in addition to the distribution of environmental benefits that are beyond the scope of this report. Furthermore, environmental

equity, in contrast to environmental racism, includes the disproportionate risk burden placed on any population group, as defined by gender, age, income, as well as race.

The Workgroup recognizes the importance and sensitivity of these terms. The Workgroup also recognizes that combining racial groups into one category, racial minorities, can lead to overgeneralizations regarding the risk burdens borne by different communities. Any perceived misuse of these terms is unintentional.

2.0 FINDINGS ON HEALTH AND EXPOSURES

Administrator Reilly's first charge to the Workgroup was to review and evaluate the evidence that racial minority and low-income people bear a disproportionate risk burden. This section surveys existing scientific information on the distribution of health effects and environmental exposures across demographic lines. The central issue is how an individual's identification with a particular ethnic minority or socioeconomic group might affect his or her exposure and/or susceptibility to environmental pollutants. Exposure-related attributes (proximity to sources, occupation, diet) and susceptibility-related attributes (genetic predisposition, age, gender) vary according to population factors such as class and ethnicity.

There are two general groups that are considered to be at high relative environmental/public health risk:

- Populations/individuals who experience the highest exposures.
- Populations/individuals who are more biologically susceptible to the health effects of environmental pollution. These people are more likely than the general population to develop environmentally induced disease or injury, even at equivalent exposures.

The subgroup at **highest risk** is composed of individuals who are more biologically susceptible and who experience high exposures.

A critical point to keep in mind in reading this section is the difficulty in distinguishing between the possible effects of poverty, ethnicity and race, and environmental pollution.

2.1 BACKGROUND HEALTH AND SOCIOECONOMIC DATA

Clear evidence exists documenting dramatic differences in death rates, life expectancy, and disease rates between African Americans and Whites. Black and Hispanic Americans are generally poorer, less educated, have higher rates of unemployment, are less likely to be covered by health insurance, and are less likely to own their own homes than White Americans. How the combination of economic, social, cultural, biological, environmental and possibly other unidentified variables contributes to the health disparities remains less clear.

2.1.1 Background Health Data

According to statistics maintained by the Department of Health and Human Services (HHS), age-specific death rates are higher for Black males and females than their White counterparts in all age groups from 0 to 84 years of age (Census Bureau, 1990). Based on data from 1987, African Americans are dying at a rate 1.5 times that of White Americans (Census Bureau, 1990). The magnitude of this gap is comparable to the dissimilarity in crude death rate between Haiti and the United States. Insufficient research has been conducted to fully understand these different

death rates. Little evidence exists linking the differences in disease and death rates to environmental factors; and, for the diseases identified as environmentally induced, little evidence exists identifying the contributions of class, race or ethnicity.

Cancer provides a prime example of a disease scientists have studied intensively, yet about which the combined contributions of race, ethnicity, and environment remain unclear. Cancer will strike one out of every four Americans. Documented differences between races for cancer incidence (new cases), prevalence (existing cases), and mortality exist. Understanding why these differences exist awaits further research. Tables 1 and 2 provide the relative cancer mortality rates for all sites combined and for ten specific forms of cancer.

Table 1: Relative Cancer Mortality Rates (1970s) for Females (* Population With Highest Cancer Rate)

CANCER SITE(S)	WHITE	BLACK	AMERICAN INDIAN	CHINESE	JAPANESE
All Sites	1.00	1.16*	0.61	0.70	0.61
Breast	1.00*	0.97	0.36	0.45	0.35
Lung	1.00	1.00	0.43	1.04*	0.48
Colon	1.00	1.06*	0.41	0.61	0.57
Ovary	1.00*	0.79	0.42	0.48	0.50
Pancreas	1.00	1.33*	0.66	0.81	0.83
Leukemia	1.00*	0.88	0.43	0.66	0.49
Cervix uteri	1.00	2.78*	1.83	0.91	0.64
Corpus uteri	1.00	1.74*	0.55	0.62	0.48
Non-Hodgkin's Lymphoma	1.00*	0.59	0.43	0.61	0.68
Stomach	1.00	1.73	1.04	1.42	3.25*

Source: Pickle et. al. (1990)

Table 2: Relative Cancer Mortality Rates (1970s) for Males (* Population With Highest Rates)

CANCER SITE(S)	WHITE	BLACK	AMERICAN INDIAN	CHINESE	JAPANESE
All Sites	1.00	1.33*	0.49	0.81	0.65
Lung	1.00	1.26*	0.36	0.73	0.46
Colon	1.00*	0.93	0.36	0.88	0.73
Prostate	1.00	2.05*	0.58	0.34	0.37
Pancreas	1.00	1.26*	0.52	0.70	0.74
Stomach	1.00	1.95	0.99	1.19	3.13*
Leukemia	1.00*	0.83	0.38	0.61	0.47
Bladder	1.00*	0.83	0.24	0.47	0.43
Non-Hodgkin's Lymphoma	1.00*	0.69	0.39	0.58	0.62
Rectum	1.00	0.95	0.47	1.05	1.19*
Brain & CNS	1.00*	0.56	0.27	0.36	0.29

Source: Pickle et. al. (1990)

Black male and females die from cancer at all sites at rates (33% and 16%, respectfully) greater than Whites. The overall mortality rate for all other ethnic minorities is lower than for Whites. However, at specific sites, the picture is more varied. For example, white females have the highest cancer mortality rate for cancer of the breast, the leading cancer site for females; yet, Chinese American women have the highest cancer mortality rate for lung cancer. Variations also exist for men. A comparison of new cancer case (cancer incidence) rates reveals a similarly varied picture: African American males have the highest incidence for all sites combined (23% higher than Whites) and for the two most frequently occurring cancers (lung and prostate). With the exception of cancer of the stomach, Native American males have significantly lower cancer rates than the general population.

2.1.2 Socioeconomic Data

Social/cultural factors can increase an individual's or population's susceptibility due to increased potential or actual exposure (live near pollutant source, activity patterns) or increased susceptibility to develop health effects. Data on selected socioeconomic parameters are presented in Table 3. The comparison indicates that Black and Hispanic Americans are on average poorer, less educated, have higher rates of unemployment, are less likely to be covered by health insurance, and are less likely to own their own homes than White Americans. Overall, about 32% of African Americans and 27% of Hispanic Americans have incomes below the poverty line, compared with approximately 10% of White Americans.

Table 3: Comparison of Selected Socioeconomic Characteristics by Ethnic Group (1988)

PARAMETER	TOTAL	WHITE	BLACK	HISPANIC
Median Household Income	\$27,225	\$28,781	\$16,407	\$20,359
Households below poverty level	13.1%	10.1%	31.6%	26.8%
Median years of school complete	12.7	12.7	12.4	12.0
Completed 4 + years of college	20.3%	20.9%	11.3%	10.0%
Completed < 12 years of school	23.8%	22.3%	36.7%	49.0%
Percent of workers unemployed	5.5%	4.7%	11.7%	8.2%
Covered by health insurance (1987)	86.2%	87.4%	79.6%	69.9%
Live in own home (1987)	64.0%	67.0%	49.0%	40.0%

Source: DOC, (1990)

Several recent studies have suggested that much, if not all, of the differences in cancer rate between African Americans and Whites can be explained by the effects of poverty (Navarro, 1990; Basquet et. al, 1991). Indeed, some have interpreted the results to suggest that if differences in socioeconomic characteristics could be eliminated, then Blacks would actually have a lower overall cancer rate than Whites (Okie, 1991; Gibbons, 1991). Others suggest that while poverty and lifestyle can explain a significant portion of the observed difference, there is still a substantial amount of variation that seems to be explained only by race or ethnicity (Gladwell, 1990; Gibbons, 1991).

The percentage of Whites and ethnic minorities living in urban versus rural areas provides an interesting comparison. As presented in Table 4, a much higher proportion of Blacks, Hispanics, and other minorities live in urban settings and, conversely, a much smaller percentage live in rural areas. The higher proportion of White Americans living in rural areas is striking. To the extent that certain environmental problems can be connected to the rural population, White Americans may be at higher risk because of their disproportionate residence in the areas.

Table 4: Comparison of Urban Versus Rural Distribution of Population by Ethnic Group

ETHNIC GROUP	LIVE IN URBAN AREAS	LIVE IN RURAL AREAS (FARM)	LIVE IN RURAL AREAS (NON-FARM)
White	70.3%	2.3%	27.0%
Black	86.1%	0.3%	13.6%
Hispanic	91.2%	0.7%	8.1%
Other	86.5%	0.4%	12.5%

A key question with regard to environmental equity is not just whether socioeconomic characteristics and ethnicity are associated with an increased potential for exposure, but whether they systematically result in higher actual exposure.

2.2 EXPOSURES

Although environmental measurements in air, water, soil, or food represent "potential" exposure rather than "actual" exposure. For example, the level of outdoor air pollution in a particular community is a measure of the potential exposure for the residents. Individuals residing in the community are likely to have significantly different exposures to air pollution depending on a number of factors such as occupation, proximity to sources, indoor pollution sources, and activity patterns (e.g., time spent indoors versus out). Therefore, although the potential for exposure may be the same, not all potentially exposed persons will experience the same actual exposure.

To improve exposure estimates, the environment through which people move during their daily activities is divided into small "microenvironments." In any or all of these microenvironments, a person might encounter polluted air, water, or food that is the critical predictor of his or her exposure. It is becoming increasingly apparent that a person's activity pattern is the single most important determinant of environmental exposures for most pollutants.

2.2.1 Residences Near Waste Sites

Evidence indicates that ethnic minorities are more likely to live near a commercial or uncontrolled hazardous waste site. In 1982-83, the U.S. General Accounting Office conducted a study of offsite hazardous waste landfills in the eight southeastern states that comprise EPA's Region IV. The study found that in three of the four communities where offsite hazardous waste landfills were located,

Blacks were the majority of the population. In all four communities, at least 26 percent of the population had incomes below the poverty level, and most of the population below the poverty level (ranging from 90 to 100 percent) was black (GAO, 1983). Table 5 lists the GAO's findings.

Table 5: 1980 Data for Census Areas Where EPA Region IV Hazardous Waste Landfills Are Located

LANDFILL	POPULATION		MEDIAN FAMILY INCOME (\$)		POPULATION BELOW POVERTY LEVEL		
	Number	% Black	All Races	Blacks	Number	%	% Black
Chemical Waste Man. (AL)	626	90	11,198	10,752	265	42	100
SCA Services (SC)	849	38	16,371	6,781	260	31	100
Industrial Chemical Co. (SC)	728	52	18,996	12,941	188	26	92
Warren County PCB Landfill (NC)	804	66	10,367	9,285	256	32	90

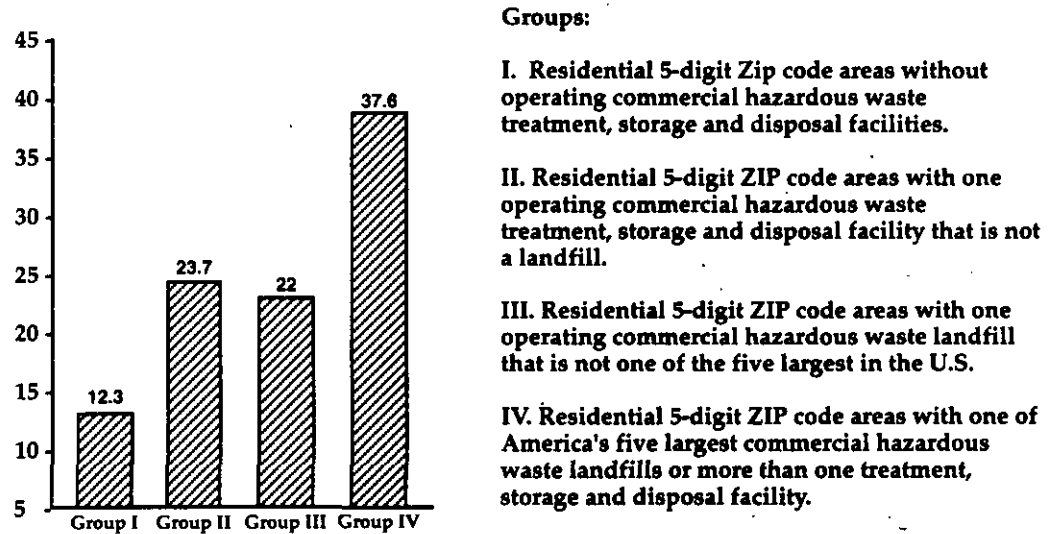
Source: U.S. GAO (1983)

In its study, *Toxic Waste and Race in the United States*, the United Church of Christ found that the proportion of minorities in communities with the largest commercial landfills or the highest number of commercial waste facilities was three times greater than in communities without such facilities (UCC, 1987). The study concluded that race was more strongly associated with residence near a waste site than socioeconomic status. Figure 1 presents the UCC's findings.

Another report by the United Church of Christ concluded that the presence of "uncontrolled hazardous waste sites" (old industrial landfills and waste sites that arose before EPA or its laws were created) is highly pervasive. More than half of the total population in the U.S. resides in communities with uncontrolled toxic waste sites. The report also found that three out of every five African and Hispanic Americans live in a community with an uncontrolled hazardous waste site.

A study in 1990 by a non-profit organization found that the EPA remediates National Priority List (NPL) sites among the rural poor at least as quickly as it does in the country as a whole (Clean Sites, 1990). EPA also evaluates potential NPL sites among the rural poor as quickly as it evaluates potential sites nationally; however, potential sites in rural poor counties are listed on the NPL at half the rate of potential sites nationally. The report conjectures that this difference may be attributable to the counties' small population size and/or lack of industrial facilities that generate hazardous waste. (A site is added to the NPL based on severity of risk and number of people affected). This study suggested that the Hazard Ranking System, the system for determining whether the risks at a potential site warrant placing that site on the NPL, be revised to take into account the dependence of many rural communities on ground-water as a drinking water source.

Figure 1: Minority Percentage of the Population in U.S. Communities with Operating Commercial Hazardous Waste Facilities



Source: UCC, (1987)

2.2.2 LEAD EXPOSURES

Lead exposures can and often do occur through multiple pathways and routes (e.g., air, paint chips, water, soil, food and house dust). Lead has known physiological and neurobehavioral effects at low levels and children have shown a far greater sensitivity than adults. Overall, it is estimated that three to four million children in the United States (approximately 17%) are at increased risk of lead poisoning (ATSDR, 1988).

The evidence on lead shows that all socioeconomic and ethnic groups have children with lead in their blood (blood lead) high enough to cause adverse health effects. As shown in Table 6, however, a higher percentage of African American

Table 6: Estimated Percentage of Children (Living in Cities with Population Over Million) 0.5-5 Years Old with Blood Levels Greater Than 15 ug/dl By Race and Income

RACE	Income Levels		
	< \$6,000	\$6,000 - \$15,000	> \$15,000
Black	68%	54%	38%
White	36%	23%	12%

Source: ASTDR, (1988)

children compared to White children have unacceptable blood lead levels (ATSDR, 1988). For both Blacks and Whites, increasing family income is associated with lower blood lead concentrations. The difference is smallest for the highest income level, yet there is still a large unexplained difference.

2.2.3 Pesticide Exposures

Exposures to pesticides occur in a variety of ways, including occupational settings; contact with garden, home, and lawn care products; contaminated food or soil; and even mother's milk. It is believed by many that racial minorities, especially Latinos, are at increased risk because of their high representation in the agricultural workforce (EPA, 1990b).

It has been estimated that farm work not done by farm families is done primarily by ethnic minorities. 80 to 90% of the approximately two million hired farmworkers are Latino, followed in order by African Americans, Black Caribbeans, Puerto Ricans, Filipinos, Vietnamese, Laotians, Koreans, and Jamaicans (Martin et al., 1985).

For a number of reasons, it is difficult to document the link between pesticides and health (Perfecto, 1990). However, it is estimated that as many as 313,000 farm workers experience pesticide related illnesses each year (Wasserstrom and Wiles, 1985; Perfecto, 1990). Another study failed to find significant differences between Black and White field workers in Florida (Griffith and Duncan, 1983), while data from the National Adipose Tissue Survey for 1982 found that Whites had significantly higher concentrations of pesticides in adipose tissue than minorities for five pesticides (Unger and Mack, 1989). No compounds measured in the study were higher in Non-Whites.

Results from a nationwide study of selected organochlorine pesticides in the milk of 1,436 mothers found that Hispanic women in the study had higher levels of dieldrin and oxychlordane, while heptachlor epoxide levels were similar for Whites and Hispanics (Savage, 1976). However, these data were not adjusted for the fact that most Hispanic mothers were from the Southwest, where pesticide use tends to be higher.

EPA's Science Advisory Board (SAB) identified worker exposures to chemicals in agriculture as a high human health risk due to the large numbers of workers directly exposed to a range of highly toxic chemicals. "[A]gricultural workers are exposed to many toxic substances in the workplace. Such exposures can cause cancer and a wide range of non-cancer health effects" (SAB, 1990). While there is very little published information on pesticide exposures in general and almost none at all on differences by call, race or ethnicity, it is clear that since racial and ethnic minorities comprise the majority of the documented and undocumented farm workforce, they may experience higher than average risk from agricultural chemicals.

2.2.4 Air Pollution Exposures

Air pollution is primarily an urban phenomenon. Concentrations of some pollutants are elevated in large urban areas where emission densities are highest. As noted earlier, a large proportion of ethnic minorities reside in metropolitan areas (Table 4, above) and therefore may be systematically exposed to higher levels of certain air pollutants.

A range of studies argue that air pollution disproportionately impact the poor and racial and ethnic minorities. One study (Zupan, 1973) found that three of the major indicators of unhealthy outdoor air quality (i.e., carbon monoxide, sulfur dioxide, particulate matter) were positively correlated with low-income areas. In a national study of carbon monoxide in the blood, African Americans were shown to have higher levels than Whites (DOE, 1982). An examination of nitrogen dioxide concentrations inside houses of poor minorities in Harlem and Washington Heights (New York City) found 48-hour average values that exceeded the national standard. The high nitrogen dioxide levels in these homes of Black and Hispanic families resulted from almost continuous use of gas-fired cooking stoves, often to heat the structure during cold weather (Goldstein et. al, 1986).

A study of the distribution of total suspended particulates from 1970 to 1984 found that Blacks experienced higher average exposures and higher average risk reduction benefits (from air pollution controls). The poor experienced a much lower relative decrease in exposure than the rich (Gelobter, 1990).

Researchers at the Argonne National Laboratory have found that higher percentages of Blacks and Hispanics live in EPA-designated non-attainment areas, relative to Whites, for particulate matter, carbon monoxide, ozone, sulfur dioxide and lead (Wernette and Nieves, 1991). Table 7 summarizes their findings. Some of the differences in potential exposure to air pollutants can be explained by regional variations in demographics and non-attainment statistics. However, the differences between Blacks and Whites are very surprising given the over-concentration of Blacks, relative to Whites, in the South (where air pollution is lowest). Also, it is important to note that Hispanics experience the highest exposure rate nationally for all pollutants except sulfur dioxide. Because county-level data are used in the analysis, the authors of the study suggest that they may be either overestimating or underestimating the population subgroup differences in exposure to air pollutants, but that underestimation is more likely.

Nieves and Wernette found several patterns in conducting the regional level analysis. First, the differences in exposure levels between percentages of racial groups residing in non-attainment areas are generally greatest in the Northeast and North Central Regions, with the West and the South following. Second, differences in potential exposure between Blacks and Whites are generally greatest for carbon monoxide and ozone, and least for lead and sulfur dioxide. Third, in no case are Blacks and Hispanics to any great degree underexposed to air pollution, relative to the majority.

Wernette and Nieves conclude that millions of racial minorities are at increased relative risk of air pollution exposure, compared to the majority population, using residence in non-attainment areas as a surrogate for risk.

Table 7: Percentages of Total U.S. Whites, Blacks and Hispanics in EPA-Designated Air Quality Non-Attainment Areas, By Air Pollutant*

AIR POLLUTANTS	WHITES	BLACKS	HISPANICS
Particulate Matter	14.7	16.5	34.0
Carbon Monoxide	33.6	46.0	57.1
Ozone	52.5	62.2	71.2
Sulfur Dioxide	7.0	12.1	5.7
Lead	6.0	9.2	18.5

* Totals by population groups are greater than 100% because counties may be included in more than one non-attainment category.

** Hispanics may be of either race, since Hispanic is an ethnic, not a racial, category.

Source: Wernette and Nieves, (1991)

2.2.5 Dietary Exposure Through Fish Consumption

Consumption of fish can be an important route of exposure for certain pollutants, such as PCBs, dioxins, and furans (classes of toxins), which can bioaccumulate in fish tissues to high concentrations, even when the concentrations of these chemicals in water are below detection limits. Many variables affect exposure rates to different pollutants and hence health risks. These variables include: amount of fish ingested, origin and type of fish, pollutant concentrations in the water body in which the fish lived, the age of the fish, parts of the fish eaten, the percentage of fat of the fish, and the way the fish was prepared. Some populations, such as subsistence fishers (individuals who depend on fish for much of their dietary protein) and some cultural groups, consume much more fish than the average population. In addition, evidence suggests that certain populations of recreational anglers may consume fish at a greater than average rate.

Nearly 20 local and national surveys and reports have examined aspects of fishing and fish consumption, and several have noted differences based on race and ethnicity. A recent survey of licensed anglers in Michigan, for example, found that Native Americans consumed 36% more fish and African Americans 13% more fish than the Caucasian population (West et. al, 1990). Another survey, a California study of sport fishers, indicates that Asians/Samoans eat the most fish followed in order by Caucasians, Hispanics, and African Americans (Puffer, 1981). National surveys also support these findings. The National Purchase Diary (NPD) Survey, a national survey of 25,000 individuals, found Asians to have the highest fish consumption rate (SRI, 1980).

Other socioeconomic factors may also play a role in rates of fish consumption. Several studies found that fish consumption generally increases with increasing age (West et. al, 1990; SRI, 1980; NYDEC, 1988). In addition, both the Michigan and NPD surveys found a correlation between lower education level and higher fish consumption. However, studies have generally not found a correlation between income and fish consumption (SRI, 1980; West et. al, 1990). The one study that did find a correlation found that fish consumption actually increased with increasing income (NYDEC, 1988). These studies, however, most often focused on licensed fishers and may not be accounting for lower-income anglers who do not purchase licenses but continue to catch and consume fish.

In addition to the quantity of fish eaten, fish preparation and species of fish eaten can also affect exposure to contaminants and may vary by socioeconomic factors. Lipophilic (fat-loving) compounds that bioaccumulate, such as PCBs, dioxins and furans, tend to accumulate in the fatty portions of the fish and accumulate to a higher degree in bottom feeding species. Eating fish with the skin and the fatty portion underneath the skin is more likely to lead to higher exposures of these contaminants than eating skinless, trimmed fillets, as is eating more of the bottom feeding species. Most risk assessments assume that the population consumes skinless, trimmed fillets, yet some studies have pointed to differences in fish preparation by ethnicity. The evidence suggests that ethnic minorities are more likely to eat fish with the skin, may be less likely to trim the fat, and are more likely to eat the whole fish (NOAA, 1985; West et. al, 1990). In addition, preferred fish species differ for different populations. The Michigan study found, for example, that Great Lakes bottom dwellers were consumed exclusively by non-

white, low-income populations. A study of anglers in Puget Sound found that Asians disproportionately consumed clams and the hepatopancreas of crabs (McCallum, 1985), both practices that might lead to higher relative exposures to pollutants.

This evidence suggests a greater potential for contaminant exposure to certain populations through the fish ingestion route. However, these studies were not designed specifically to address these concerns. Additional studies are needed before these differences can be consistently and conclusively validated. In this regard, EPA, in conjunction with the Indian Health Service, is sponsoring a fish consumption study of four Pacific Northwest Indian tribes which is being conducted by the Columbia River Inter-Tribal Fish Commission.

EPA's authority to address fish consumption is limited to the section of the Clean Water Act that gives EPA responsibility for setting water quality criteria for protecting human health. EPA develops its water quality criteria and encourages the states to set water quality standards assuming consumption over a 70-year period of two liters per day of ambient, untreated water and 6.5 grams per day of fish caught in the same body of water. States use their water quality standards as a basis for determining allowable stream/river loadings for contaminants discharged from industrial facilities and from other sources.

In order to determine the average amount of fish consumed, EPA examined available studies and decided to use the 1977-78 survey conducted by the United States Department of Agriculture (USDA). All the studies examined had shortcomings. EPA decided to use the USDA survey because, at the time, it was the most recently completed study and because it was a large, broad-based national survey. That survey indicated that the average individual consumed 6.5 grams of estuarine fish per day and 14.3 grams of all types of fish per day.

In 1988, the Office of Water (OW) became concerned that the fish consumption rates it was using might not be adequate to protect human health when they noted that the number of fish advisories was increasing. With the exception of Fish and Wildlife Service's responsibility for issuing fishing advisories in Federal Wildlife Refuges, states are responsible for issuing fishing advisories when fish in a waterbody are unsafe to eat. OW gave the American Fishing Society a grant to collect information regarding state practices and criteria for issuing fishing advisories and their recommendations for technical assistance they needed from EPA.

EPA has implemented the three activities the states identified as being most useful to them. First, OW developed uniform procedures for sampling and analyzing fish species to determine pollutant concentration levels occurring in fish, including information on which species to analyze, the age/size of fish to consider, the fish parts to include in the measurement, and the contaminants to be analyzed. OW worked with the states to develop guidance to address these issues and expects to release it in November 1992. OW plans to hold workshops in Fiscal Year 1994 to train the states on use of these guidelines.

EPA is also developing guidance for states to use in implementing fish consumption surveys to determine site specific consumption rates for use in developing state water quality standards. OW started work on these guidelines in 1988 and held a workshop for national experts on this subject in December 1991. EPA announced the availability of a document to help states develop consumption rates in April 1992 to ensure adequate protection of local populations consuming more fish than the national consumption rates. The office distributed copies of the

guidance to the states and others who had participated in its development and has been filling about 30 requests a day for it ever since.

OW also established an electronic bulletin board to help states share information on fishing advisories. The bulletin board was initiated about 1 1/2 years ago and includes all currently effective fishing advisories and an annotated bibliography of all documents related to the consumption rates and advisories. The bulletin board allows users to query other users for useful information they may have.

2.3 ENVIRONMENTAL HEALTH EFFECTS

The difficulty in establishing a causal relationship between health effects and environmental exposures stems from a multitude of factors. First, the etiology of many diseases has not been fully elaborated. Second, most diseases to which environmental exposures may contribute have a plethora of possible causes. People are also routinely exposed to a vast array of environmental agents—few of which are quantified. Fourth, the latency period for health effects from long-term, low-level exposures may be 20 years or more. Fifth, environmental pollutants may cause multiple health effects. Finally, a single health effect may result from multiple exposures.

Relatively little information exists on the influence of class, race or ethnicity on environmentally induced disease. Most of the work has emphasized differences in disease rates between various groups where a strong likelihood exists that environmental exposure plays a causative role. Lung cancer and Chronic Obstructive Pulmonary Disease (COPD) are two health outcomes for which environmental exposures may have a causal effect.

Lung cancer accounts for about 14% of all cancer incidence and 23% of all cancer deaths (NCI, 1989). The incidence of lung cancer in Black men is significantly higher than any other ethnic group, 0.5 times higher than Whites, more than 2.5 times higher than Hispanics, 1.5 to 3.5 times higher than Asians, and more than 8.0 times higher than Native Americans (NCI, 1984). It is estimated that cigarette smoking is responsible for about 85% of lung cancer cases (NCI, 1984). Other risk factors that can contribute to the disease are exposure to asbestos, ionizing radiation, and a number of chemicals, including benzene and inorganic arsenic.

The higher smoking rates among Black men (34% who smoke compared to 28% for Whites) is undoubtedly responsible for much of the difference (NCI, 1984). Nevertheless, it is not clear that smoking can explain all of the variability, especially the eight-fold difference between Blacks and Native Americans. Air pollution, along with other pollutant exposures, may play a role in this disparity.

COPD, which includes emphysema, chronic bronchitis, asthma, and allied conditions, accounted for about 3.5% of all deaths in the United States in 1987, up from 1.6% in 1970. An estimated 10% of all Americans are afflicted with COPD, with asthma alone affecting as many as 20 million people (NCHS, 1990).

When viewed as a single entity, COPD is more prevalent in Whites than Blacks and more prevalent among Blacks than other ethnic minorities. Both African Americans and Whites exhibit a significantly higher incidence among poor people. A comparison of COPD by ethnicity and income is given in Table 8.

The implications of COPD for environmental equity are not entirely clear. It is not yet possible to separate the effects of smoking and occupational exposures from environmental exposures or to assess the role of

varying susceptibility. However, the effect of exposures to environmental pollutants on the prevalence, morbidity, and mortality of COPD is believed to be

Table 8: Prevalence of Chronic Respiratory Conditions (per 1,000) for 1985-1987 by Income and Ethnicity.

FAMILY INCOME	WHITE			BLACK			OTHER		
	Total	<\$20,000	>\$20,000	Total	<\$20,000	>\$20,000	Total	<\$20,000	>\$20,000
Total	102.7	125.8	95.0	81.0	97.1	58.0	53.0	51.3	53.3
Chronic Bronchitis	53.5	64.6	50.1	35.3	42.6	28.1	27.1	27.0	24.6
Asthma	39.6	42.7	39.7	42.2	49.9	29.2	22.6	21.1	24.6
Emphysema	9.6	18.5	5.2	3.5	4.6	0.7	3.3	3.2	4.1

Source: NCHS, (1990)

greater than on cancer rates (Becklake, 1990; Doll and Peto, 1981). One hypothesis is that air pollution exposures vary by race, ethnicity, and class, explaining part of the variability in COPD.

2.4 CONCLUSIONS

There are clear and dramatic disparities among ethnic groups for death rates, life expectancy, and disease rates. There is also a surprising lack of data on human exposures to environmental pollutants for Whites as well as for ethnic and racial minorities. One exception is lead exposures in children, and there the data are unequivocal: Black children have disproportionately higher blood lead levels than White children even when socioeconomic variables are factored in. For other pollutants, available information suggests that racial minorities may have a greater *potential* for exposure to some pollutants because they tend to live in urban areas, are more likely to live near a waste site, or exhibit a greater tendency to rely on subsistence fishing for dietary protein.

3.0 EPA PROGRAMS

EPA programs are devoted to the control of pollution in specific environmental media (e.g., air, surface water, drinking water); the manufacture, distribution and use of hazardous substances in commerce and agriculture; and the management and clean-up of solid and hazardous wastes. The legislation authorizing these programs gives EPA, the States, and municipal governments different regulatory, implementation, and enforcement powers and responsibilities in each of these program areas. Administrator Reilly charged the workgroup with reviewing current EPA programs to identify factors that might give rise to differential risk reduction, and to develop approaches to correct such problems.

A general review of EPA programs reveals variations, within and among the program offices, in addressing the distribution of risks across population groups. Some offices explicitly consider the distribution of risk and high risk populations in their decision-making processes. For example, the Office of Pesticide Programs (OPP) identifies and addresses risks to population groups, particularly agricultural workers, through the special review, reregistration and registration programs. For dietary exposure, OPP has a system in place that can examine consumption of various commodities based on gender-, ethnic- and age-specific patterns. OPP uses the system to examine exposure of 22 population groups. In addition, OPP routinely uses "safety factors" and specialized risk assessments to address equity issues. Another example is the Office of Water's drinking water program which considers exposure from all sources and to the most exposed and sensitive individuals. However, there has never been a consistent EPA policy to address equity issues.

Some of the variation between EPA program treatment of environmental equity may be because equity issues may be more prevalent with respect to some environmental problems, which may be reflected in the EPA programs. Also, statutory authority and state responsibilities affect the degree to which EPA programs (as opposed to state and local programs) address equity concerns.

The Task Two Subgroup had two different projects that focused on environmental equity in EPA program offices. The first project was in the Office of Solid Waste and Emergency Response (OSWER). OSWER held workshops for staff members and management that were designed to identify possible environmental equity problems and develop solutions. The second project focused on environmental equity issues within the Office of Air and Radiation (OAR). For this project, the Office of Policy Analysis and Review within OAR conducted an analysis of their programs with respect to environmental equity issues. A report of their analysis was then written and circulated to OAR staff.

These two projects provide program staff with examples of how environmental equity issues can be approached within their programs. These are only two of the many approaches which can be used in evaluating and dealing with environmental equity issues within EPA programs. As awareness of environmental equity issues increases and as the Workgroup's recommendations are carried out, the program offices will undoubtedly refine methods for identifying possible equity problems, developing solutions and adopting measures of success.

3.1 OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE

The subgroup decided that its review of EPA programs needed the involvement of program managers: Identifying factors that might give rise to a differential distribution of program benefits and developing solutions to any identified problems requires knowledge of the governing laws and regulations, and the processes that are used to keep these programs functioning. In an early effort to involve program managers, the subgroup found that most program managers were not aware of the Environmental Equity Workgroups efforts to examine these issues in EPA programs. Unless program managers were familiar with the data, information, and concerns regarding environmental equity, they could not be expected to examine their programs thoughtfully and carefully. To introduce program managers to equity issues, the Subgroup held four Environmental Equity Awareness Workshops. These workshops were held for OSWER program managers.

3.1.1 General Conclusions of Awareness Workshop Participants

OSWER managers were chosen as the participants in the pilot workshops for several reasons:

- Much of the equity literature involves the siting of hazardous and solid waste management facilities in minority and low-income communities.
- Environmental equity may become an issue in the impending reauthorization of the Resource Conservation and Recovery Act (RCRA).

In each of the workshops, participants expressed the following general views with respect to the ability of program managers to identify and address the potential equity concerns in their programs:

- Environmental equity awareness workshops or similar forums are necessary to help program managers identify equity issues.
- The scope of the environmental equity problem is still unknown, and further research is needed to understand the magnitude and elements of equity problems.
- It is difficult to assess how the formal and informal decision-making processes within a program influence program results in general and with respect to equity.
- The Agency should adopt an environmental equity policy or include equity objectives in program mission statements.

3.1.2 Specific Problem Areas

Specific problem areas discussed by OSWER managers involved the siting and permitting of solid and hazardous waste facilities, risk analysis, and risk communication. These problem areas and the preliminary recommendations of OSWER program managers are discussed below. OSWER managers also recommended that equity training be part of the training received by Agency personnel and suggested that low-income and racial minority individuals would be the primary beneficiaries of positive results arising from EPA's pollution prevention initiative.

Siting and Permitting of Waste Facilities. OSWER managers recognize that the siting and permitting of hazardous and solid waste management facilities raise socioeconomic factors that are distinct from technical concerns (geohydrology, depth to groundwater, etc.). They also believe that one result of the "not in my backyard" (NIMBY) syndrome is that such facilities will tend to be located in communities with the least ability to mount a protest. They pointed out that this problem is compounded when wastes from Superfund sites are brought to commercial hazardous waste management facilities as a result of community opposition to incineration of the hazardous waste at the Superfund site.

In this context, the division of authorities between Federal and state governments be explained: the siting of waste facilities is controlled primarily by state and local governments. Land uses historically have been governed by the states, and attempts by the Federal government to control local land uses have often been met extreme opposition. EPA's role in permitting comes after the site has been chosen, and principally involves technical considerations. However, EPA should assess the feasibility of providing enhanced leadership to states to correct problems in the siting of waste facilities.

To assist in overcoming the problem of actual and perceived disproportionate siting in minority and low-income communities, EPA, according to workshop participants, should exercise increased oversight in the siting and permitting of hazardous and solid waste management facilities. One possibility would be to increase EPA's role by conducting case-by-case analyses to determine the risks these facilities pose to the health of communities in which they are to be located. To consider these risks, workshop participants suggested that regulators could:

- Add the risks posed by a new facility to the risks posed by polluting facilities already located in the community to ensure that risk remains below an acceptable threshold; or
- Characterize the health of community members at the time of siting to ensure that new threats are not added to the health of populations already subject to pollution burdens.

Workshop participants stressed that RCRA facilities receiving Superfund hazardous wastes, like RCRA facilities receiving other types of hazardous waste, should always be in compliance with applicable Subtitle C (hazardous waste) regulations. They also suggested that equity awareness be part of the training of permit writers, and that it would be desirable for communities to take a more active role in the solid and hazardous waste facility permitting process. They suggested that making technical assistance grants (TAG) (currently available under

EPA's Superfund program) available to hire outside experts to explain a proposed facility's risk would help facilitate this process.

Risk Analysis. Workshop participants pointed out that the aggregate human health risks posed by all types of industrial facilities in a particular community are not addressed in EPA programs. They believed that this failure can be attributed partially to the inherent difficulty of performing such analyses and to the Agency's structure and mission which is fragmented under many different pieces of legislation into problem-specific program areas.

Workshop participants believed that area environmental studies are necessary to understand the importance of cross-media environmental impacts in poor and racial minority communities. They suggested that the Agency perform cross-media pollution studies for heavily industrialized areas similar to the study that the Agency has already performed for the City of Baltimore.¹ The findings of such studies would help to characterize the scope of environmental equity problems and to develop methods for addressing these problems.

Workshop participants also suggested additional funding to the Agency for Toxic Substances and Disease Registry (ATSDR) to gather epidemiological data and to study aggregate risk in heavily industrialized areas of the country. In a specific example, a workshop participant suggested that the Agency reexamine its methodology for setting priorities for corrective action at RCRA facilities to consider a facility's location and surroundings as well as the risk-producing conditions at the facility itself.

Risk Communication/Outreach. The Agency devotes considerable resources to risk communication and outreach efforts, especially in the Superfund program. These efforts include community outreach projects, the use of TAGs to help communities hire outside experts to describe the risks posed by Superfund sites in their communities, and the translation of EPA bulletins and notices into non-English languages.

Workshop participants believed that these risk communication and outreach efforts should be evaluated to determine their effectiveness and to ascertain whether or not these programs reach into poor and racial minority communities. They noted that the poor and racial minority communities are rarely involved in Agency rulemakings and seem to be unaware of their ability to use Agency resources as well as of their ability to petition ATSDR to perform health surveys in their communities. This underscores the Agency's need to improve its outreach programs to these communities. Barriers to effective risk communication and outreach that were identified included the inherent difficulty of making complex technical material understandable to lay people and the complexity of the TAG application process.

Workshop participants had the following risk communication recommendations:

- Risk communication and environmental education projects should be specifically targeted to poor and racial minorities. Such projects should be sensitive to the specific needs and cultures of these communities.

¹ The Baltimore Integrated Environmental Management Project examined leakage from underground storage tanks, pollution in Baltimore Harbor, hazards from the abatement of lead paint, indoor air, and air toxics (EPA 1987a,b,c,d,e,f,g).

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- Superfund's strong emphasis on risk communication should be used as a model for other EPA programs.
 - Communities should be informed about the materials and information available that explain the risks posed by facilities in their communities.

Equity Training for EPA Personnel. Workshop participants strongly recommended that additional equity awareness workshops be held and that equity training be made a part of existing EPA training programs. They believed that some kind of training was necessary to be able to identify issues and policies with equity impacts.

Pollution Prevention. Workshop participants pointed out that EPA's pollution prevention initiative, to the extent that it is successful, should help to mitigate the adverse health impacts experienced by racial minority and low-income individuals as a result of exposure to pollution and polluting facilities. Reducing the quantity and toxicity of waste should result in smaller quantities of waste and less toxic waste being sent to the hazardous and solid waste management facilities (often located in racial minority and low-income communities). Fewer and less toxic emissions to the air should help to improve air quality in urban areas where racial minorities live in high numbers. Fewer and less toxic emissions to surface waters reduces the risk to racial minorities and the poor who depend on fishing as an important source of food. Protection of groundwater benefits the rural poor communities in the U.S. that depend on groundwater as their primary drinking water source.

3.2 OFFICE OF AIR AND RADIATION

The Office of Air and Radiation (OAR) has responsibility for environmental and pollution policy, standards development, and implementation programs pertaining to air and radiation. Currently the bulk of OAR's resources are focused on implementation of the Clean Air Act of 1990. This section examines equity issues relevant to OAR by asking two questions:

- What evidence exists that communities susceptible to particular health problems may be disproportionately exposed to pollutants?²
- What types of impacts bearing on the issue of environmental equity could be produced by the 1990 Clean Air Act Amendments?

Intertwined with these questions are suggestions for changes in Office of Air and Radiation programs.

² In framing its analysis, OAR also examined existing evidence of disproportionate exposures. See the studies as discussed in Sec. 2.2.4.

3.2.1 Composition Of Populations Sensitive To Air Pollution

Based on the limited data available, several population groups identified as being sensitive to the health effects of air pollution seem to be disproportionately comprised of low-income or racial minority individuals. These groups include asthmatics, people with certain cardiovascular diseases or anemia, and women at risk of delivering low-birth-weight fetuses.

EPA staff have identified asthmatics as particularly sensitive to the effects of carbon monoxide (OAQPS, 1984), sulfur oxides (OAQPS, 1982a), particulate matter (OAQPS, 1982b), ozone (OAQPS, 1988), and nitrogen oxides (OAQPS, 1982c). The available literature indicates that African Americans, especially in the lower income brackets, suffer from asthma at a rate greater than the population as a whole (See Table 8, in section 2.3).

Schwartz et al. found that, in children between six months and 11 years of age, asthma prevalence was 7.2 percent in Blacks versus 3.0 percent in Whites. Even after adjusting for factors such as young maternal age at birth, low birth weight and income, Blacks were still at higher risk for asthma and frequent wheeze attacks than were Whites. The authors stated that whether racial genetic differences exist in susceptibility to asthma is uncertain (Schwartz, 1990). Mak et al. also found a significantly higher prevalence of asthma among Blacks (Mak, 1982). Goldstein and Weinstein state that "clinical impressions suggest asthma prevalence among low-income nonwhites to exceed by a factor of up to 3-4 the prevalence of asthma in the population as a whole." (Goldstein and Weinstein, 1986).

Schwartz et al. found that low income was associated with asthma as well. They refer to other research showing poverty to be a "source of stress, which may play a role in the etiology and expression of bronchial responsiveness and asthma." (Schwartz, 1990).

According to OAR staff papers, individuals suffering from cardiovascular disease are among those most sensitive to the effects of sulfur oxides (OAQPS, 1982a) and particulate matter (OAQPS, 1982b). A 1987 study argued that the mortality rate for cardiovascular disease among Blacks was about 37.5 percent higher than it was among Whites (UCC, 1987).

OAR staff also report that individuals suffering from anemia are particularly sensitive to the effects of carbon monoxide (OAQPS, 1984). In 1987, Black mortality rates for anemia (per 100,000) were 2.6 (male) and 2.0 (female). For Whites, the corresponding figures were 0.8 and 0.6 (HHS, 1991). Morbidity statistics show that Blacks reported an average of 21.6 incidences (per 1,000) while Whites reported 12.8 (NCHS, 1990).

The underlying causal factors for the difference in disease rates could be: (1) exposures to air pollution; (2) exposures to other aggravating factors; and/or (3) innate susceptibilities. Further work is needed confirm these patterns, and, if confirmed, to untangle which of these factors best explains the differences in health effects.

If different exposures to air pollution are a factor, then EPA must decide whether and how to redress those differences. The Agency could consider any number of steps, from enhanced education for the affected populations (e.g.,

alerting black or low-income populations to their increased risk for asthma and what to do in case of an attack) to regulatory action. If differences in innate susceptibility to conditions aggravated by air pollution are established, then OAR should assess whether it has adequately protected those sensitive populations in setting air pollution standards.

3.2.2 1990 Clean Air Act Amendments

The 1990 Clean Air Act Amendments potentially can affect the differences in pollution exposure between ethnic and economic groups. The following analysis examines the 1990 Clean Air Act and describes the potential equity impacts. Urban Exposures. The 1990 Clean Air Act Amendments provide powerful new tools—and strengthen old tools—to ensure that the national ambient air quality standards (NAAQS) are attained nationwide. Most (although not all) of the nation's serious non-attainment problems occur in urban areas. To the extent urban air quality is improved via the Act, a higher percentage of racial minority populations will experience greater improvements in air quality than Whites because of their greater representation in urban areas and because of the high levels of pollutants in these areas (see Table 4, Section 2.1.2).

The central planning mechanism for attaining the NAAQS will be the State Implementation Plans ("SIPs"). The SIPs could contain simple tracking mechanisms for evaluating their effect on racial minority and low-income populations relative to white and higher-income populations. For example, as carbon monoxide ambient air quality data are collected and submitted, EPA could compare the trends in areas predominantly occupied by racial minorities or the poor with the trends in other areas.

Title III of the Amendments (section 112 of the Act) adds a comprehensive program to regulate toxic air pollutants, supplementing the more limited toxics program which had been in place since 1970. Section 112(d) requires EPA to set national standards requiring Maximum Achievable Control Technology for sources of 189 listed toxic air pollutants. Section 112(k), entitled "area source program", directly addresses the problem of long term exposure to toxic air pollutants in urban areas, which tend to have high minority populations. The express purpose of section 112(k) is to achieve a reduction of "not less than 75 percentum in the incidence of cancer attributable to emissions" from urban air toxics sources. To translate this goal into specific controls, section 112(k)(3) requires the development of a national strategy for regulating area sources of toxic air pollutants. An EPA risk approach to this strategy can help address air problems in high-risk populations, such as those found in many minority communities.

The 1990 amendments also added section 112(r), which is designed to reduce the risks of accidental releases of toxic air pollutants such as the incident in Bhopal, India, which resulted in extensive adverse health effects to lower income communities located near the Union Carbide chemical plant. Among other things, section 112(r) will require businesses using certain toxic pollutants in above-threshold amounts to develop risk management plans. It also gives EPA new authority to issue administrative orders to abate substantial and imminent threats to health or welfare due to accidental releases. This authority will provide EPA with additional tools to address risks to communities located near hazardous chemical facilities.

Title V of the Clean Air Act (CAA) establishes the requirements for state permit programs, describes permit requirements and conditions, defines the sources to be

covered by operating permits, and provides for notification to EPA and surrounding governmental entities of permit applications and actions. This portion of the Act does not explicitly add new authority to EPA's ability to consider equity when establishing or implementing regulations. However, the permitting provisions may provide EPA the opportunity to object to any permit on the basis of other requirements of the Act which are related to increased environmental risks associated with exposed communities (Section 505(b)):

"If any permit contains provisions that are determined by the Administrator as not in compliance with the applicable requirements of this Act...the Administrator shall...object to its issuance."

In addition, Section 173(a)(5) gives EPA explicit authority when evaluating preconstruction permits to examine "social costs imposed as a result of its [a new major source in nonattainment area] location, construction, or modification." To the extent that EPA is able to establish clear standards for evaluating the equity impacts of permits, the Agency may be able to use these sections to raise equity concerns.

Section 108 of the CAA requires the Administrator to publish air quality criteria and control techniques that include information on any known or anticipated adverse effects on welfare. EPA has limited its consideration of welfare to property and agricultural impacts. More could be done to address socioeconomic aspects.

Section 110 of the Act gives states a great deal of flexibility in deciding what control strategies to use to meet air quality standards. EPA could provide more information on the socioeconomic impacts of different control options to allow states to evaluate equity concerns.

The flexibility afforded industry may alter emission patterns. It is essential that OAR examine its programs and policies to a greater extent to determine whether they place poor and/or racial minorities at greater risk. The emissions trading program may have important environmental equity consequences, such as the innovative trading plan proposed for the Los Angeles air basin. There may be a real possibility of increasing or decreasing the concentrations of emissions in one part of a basin through trading pollution credits from another. Outside of the acid rain provisions, the CAA does not require any emissions trading. These non-acid rain trading plans will be state or local initiatives and are currently more theory than real programs. However, EPA will have substantial impact on the structuring of these programs through guidance issued for State Implementation Plans or operating permit programs.

Siting of New Major Sources. As raised previously, the siting of hazardous waste facilities which are stationary sources of air pollution raises equity concerns (see Section 2.2.1). The primary Title I provisions addressing siting of new major sources are: the Prevention of Significant Deterioration (PSD) and visibility provisions in Sections 165 to 169 for attainment areas, and section 173 for non-attainment areas.

The PSD and visibility sections, which focus on protecting "clean air" areas and national resources such as parks, do not explicitly address equity considerations. The main pressures applied to new sources by these parts of the Act are to apply Best Available Control Technology (BACT) and to avoid violating certain ambient air pollution levels. By requiring BACT in all areas where new major sources are sited, the provisions increase pollution prevention in all communities. Admittedly,

better organized communities are more equipped to participate in the control equipment decision process. However, equipment standards set in these communities will apply in all subsequent BACT determinations.

Section 173 specifies the requirements for preconstruction permits to be issued for new major sources locating in areas not attaining any one of the NAAQS—"non-attainment areas." Discretion in the implementation of Section 173(a)(1) could impact low-income areas. Section 173(a)(1) provides:

The permit program provides that permits to construct and operate may be issued if (A) offsetting emissions reductions are obtained; or (B) if the source is located in a zone identified for targeted economic development for which a "growth allowance" to accommodate emissions increases from new sources is contained in the State Implementation Plan for the area.

Thus new facilities could be sited more easily in economically depressed areas. OAR should pay close attention to the distribution of pollution increases and offsets to ensure that demographic groups are not consistently targeted for pollution increases.

Health Effects Associated with Air Pollution. The Act contains several provisions involving health or risk assessments and setting of health-based standards that could address potential risk inequities. The Act provides for health-related studies, clearinghouses, or health standards for which EPA could: (1) analyze in detail the distribution of the health effects of air pollution; (2) sponsor new research; and, (3) use this information in setting health-based standards. Several examples are listed below.

Section 103(d) requires the Administrator to conduct a research program on the short-term and long-term effects of air pollutants, and specifies that an assessment be prepared for each of the newly-listed Section 112(b) hazardous air pollutants.

Section 108(a) instructs the Administrator to issue air quality "criteria" documents for those pollutants for which national ambient air quality standards are established. The Administrator must include in those documents a description of the "latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on public health or welfare which may be expected from the presence of such pollutants in the ambient air." Studies analyzing the effect of air pollutants on different population groups (such as African Americans with asthma or high blood lead levels) could be included in such criteria documents.

Section 109(b) legislates the setting of national primary ambient air quality standards, which are based on the criteria documents and provide an adequate margin of safety to protect the public health. If one segment of the population is more susceptible to health effects associated with the NAAQS pollutants, such information should be incorporated when the primary standards are set or revised.

Section 112(f) provides for a report which discusses methods of estimating residual risk to the public health (risk remaining after the technology-based standards have been set) from hazardous air pollutants. Research could address the question of whether racial minority or low-income populations have higher hazardous air pollutant residual risk.

Section 112(k) directs EPA to conduct a research program on the problem of toxic air pollutants in urban areas. This program is to include a study of the health effects of smaller urban sources of toxic air pollutants, and of the chronic and acute health effects of smog-forming compounds and acid aerosol formation. The implementation of the urban area focus of this provision has obvious implications for many areas which have higher exposure or higher risk populations.

Section 112(p) directs the establishment of the Mickey Leland Urban Air Toxics Research Center. Part of the Center's mission could be to research racial or income differences in hazardous air pollutant exposure, risk, or health effects. Furthermore, the Center could study the cumulative impacts of multiple sources and chemicals, and different pathways of exposure.

The Chemical Safety and Hazard Investigation Board established by *Section 112(r)* could evaluate, as part of its investigative process, the income and racial composition of communities in which serious accidental releases occur. Alternatively, EPA could take on this task as part of its own broader assessment of accidental releases.

Section 202(l) mandates an EPA study examining the need for emission standards specifically aimed at several toxic air pollutants. In conducting this study, EPA could also ask the question, are low-income or racial minority populations differentially susceptible to the health effects associated with mobile source toxic emissions?

Section 108(e) requires EPA to publish guidance for the states on the development of transportation measures necessary to demonstrate and maintain attainment of the NAAQS. Such guidelines could advise the states to actively involve members of minority and low-income constituencies in their planning and public participation processes.

Section 312 instructs EPA to complete "a comprehensive analysis of the impacts of this Act on the public health, economy, and environment of the United States." The first version of this analysis is to be completed in 1991, and updates are to be submitted to Congress starting in 1992. Such impact assessments could discuss the Act's effects on racial minorities and low-income populations.

Socioeconomic Effects. Several sections of the Act might allow EPA to examine how the economic effects associated with the Air Act will be distributed among different communities and might provide avenues for community involvement in the decision making process. The limited theoretical and empirical studies available tell a somewhat mixed story. Only one of the studies examined cost-benefit distribution of environmental benefits and costs relative to economic level; it found that average air pollution costs as a percent of income were regressive (Gianessi et. al, 1979). On the benefits side, low-income and/or minority populations benefitted as much (and sometimes more) from pollution abatement efforts as did middle- and high-income groups. However, since low-income groups often started out with poorer air quality, their greater benefits still resulted in poorer air quality relative to more affluent groups.

3.2.3 Conclusions

The literature available illustrates that exposure, siting, sensitivity, and the distribution of air pollutants raise issues of equity in the Office of Air and Radiation's programs. Available studies do not demonstrate or raise the suggestion OAR's policies have resulted in differential allocations of environmental benefits. However, the literature examined suggests that minority and low-income populations have experienced poorer air quality because they live in urban areas, have in some cases lived in closer proximity to air polluting facilities, and been represented more in groups sensitive to certain air pollutants than have non-minority and higher-income people. The Clean Air Act of 1990 aims to improve air quality for all Americans. Provisions in the Act provide opportunities to address the sensitivities and risks of low-income and racial minority populations. Overall, the Act's strict non-attainment provisions should result in improved air quality for the low-income and racial minority communities.

4.0 NATIVE AMERICANS: DISTINCT ISSUES

Administrator Reilly charged the Workgroup with evaluating the evidence that racial minority and low-income people bear a disproportionate risk burden. As the Workgroup began to frame its analysis, it recognized that the trust relationship between the federal government and sovereign Native American tribal governments results in distinctive environmental issues. The trust relationship, based on treaties and legislation, differs greatly from that between federal and state governments. To address the environmental equity issues facing Native Americans, the Workgroup formed a Native American Tribal Issues Subgroup.

4.1 REGIONAL INDIAN COORDINATOR CONCERNS

Currently, Indian reservations are not often considered in risk policy. Only recently have risk initiatives begun in Indian country. Environmental Equity Workgroup staff met with Regional Indian Coordinators in May, 1991. The Regional Indian Coordinators raised several concerns:

- Indian Tribes may be at a higher risk than the average population due to high wild food consumption, contaminated drinking water sources, high levels of radioactivity found on reservations and high fish consumption rates. In addition there is a lack of an environmental protection infrastructure or organization to carry out the responsibilities associated with environmental protection on many reservations.
- While individual risks may be high on reservations, Indian Tribes could be overlooked in EPA's risk-based approach, especially if population risk is the primary method of risk analysis. Due to the "large land mass -- small population" situations of reservations, population risk will often be small relative to other, especially urban, population groups.
- EPA's existing risk analysis methodology may not include factors that accurately assess risk in Indian country.
- There is a perceived inequity by Native Americans in how the Agency funds Tribal and state governments for the same programs under the same statutory authority.
- Indian tribes are substantially behind states in environmental protection infrastructure development. This may contribute to higher environmental risks on Indian reservations.

4.2 WISCONSIN TRIBES COMPARATIVE RISK PROJECT

In response to these and other concerns, a comparative risk project was initiated to examine the 11 tribes in Wisconsin. The project is a cooperative effort between: Office of Policy Planning and Evaluation's (OPPE) Regional and State Planning Branch, Region V Indian and Planning Staff, and the Office of Water (OW). The project was initiated to provide preliminary information on the following areas³:

- Determine the highest environmental risk facing the Wisconsin Tribes;
- Learn how the comparative risk framework and methods could be adjusted for the different cultural and environmental factors that affect Tribes; and
- Determine how the risks facing Tribes compare with those facing America generally, Region V, and the state of Wisconsin.

For this project, comparative risk methods were adapted to fit tribal conditions. Wisconsin Tribes are Great Lakes, woodland Indians that rely heavily on a subsistence lifestyle. The project also took into account the Tribes' fixed land base and cultural and religious values. Studies were obtained that calculated the average consumption of local fish, game and other wild foods gathered by Native Americans. The exposure assessment took into account actual levels of contamination in fish and game when calculating the intake of contaminants from these foods.

The methodology used in the analysis for this study was adapted to include damages to cultural and religious values and subsistence lifestyles. This is a deviation from existing EPA comparative risk methodology. Interestingly, it showed some significant damages and changed the ranking of traditional environmental problem areas.

Food contamination was added to the list of problem areas analyzed. In previous comparative risk projects not focused on Native Americans, food contamination was not determined to be a high risk. Although pesticide residues on commercially prepared foods have been found to be a high risk in other projects, food contamination would have ranked as a high risk in this project even if pesticides were excluded. Nearly all of the risk was found to result from PCB and mercury contamination. Food contamination, in fact, was among the highest health risk.

In the analysis, industrial activity ranked lower than in other projects. Tribes in the region have avoided industrial development in order to preserve the local environmental quality. This is in direct contrast to the problems characterized for Region V.

The project also revealed that criteria air pollutants ranked much lower than in other projects. However, acid deposition (SO_x and NO_x) was the exception,

³ It must be noted that this comparative risk project analysis was accomplished within a very short time frame and with limited funding.

ranking in the top three problems in the Ecological Risk category, along with point sources and physical degradation of aquatic habitat.

Along with food contamination, the highest ranked problems in the Health Risk category were non-point sources (non point source excludes runoff of pesticides, but includes air deposition of pollutants), indoor air, and radon.

The rankings for the Economic and Social risk were: Non point sources, physical degradation of aquatic habitat, food contamination, physical degradation of terrestrial habitat, unmanaged waste, and acid deposition.

One of the projects most significant findings was the need for environmental protection infrastructure for tribes. The lack of an environmental protection infrastructure—laws, standards, laboratories and other facilities, enforcement authorities and the professional staff to implement programs—can significantly increase the environmental risks that tribes face. Many tribes do not have staff who are knowledgeable enough on environmental matters to: (a) implement an environmental protection program; (b) represent the Tribe's environmental interests during decision-making, either on or off the reservation, and (c) interpret or communicate environmental risks to the Tribe. This lack of infrastructure leaves the Tribes without an effective way to manage environmental risks, leaving Tribe members extremely vulnerable to these risks.

Several key findings emerged from the project:

- Pollutants travelling long distances, especially those that bioaccumulate, can cause high risks.
- Air deposition of pollutants can be a source of significant risks.
- Many risks could be substantially lowered if Tribes had the capacity to manage environmental problems.
- A serious need exists to prevent damage to Indian reservation environments in order to (a) protect cultural and religious values towards the environment, and (b) maintain subsistence resources for future generations. For Native Americans, there are no substitute lands for the reservations or their resources.
- Tribes need knowledge and resources to manage and protect the reservation environment, and to influence policy decisions made off the reservation that influence their health and their environment.

The project demonstrated that risks on Native American reservations are different than in the Region or America generally. The project demonstrated the use of a methodology that included factors that enhanced EPA's ability to depict more accurately the risks in Indian country.

The use of this improved methodology for exposure assessment has significant implications. Although the Wisconsin Tribes may differ from other Tribes in wild food consumption, religious and cultural values, this project is valuable in demonstrating how such adjustments can and should be made in the exposure assessment process for the Native American lifestyle. In addition, the lack of an environmental protection infrastructure was found to be a significant risk for Wisconsin tribes. Because many tribes lack adequate environmental protection infrastructure, most Native Americans also face this risk. This has implications for carrying out environmental regulations and policies that should be considered when making risk management decisions.

5.0 RISK ASSESSMENT AND RISK MANAGEMENT

The Risk Assessment Subgroup had the task of answering two questions: (A) Does EPA's risk assessment process accurately depict the risks to low-income and racial minority communities?; and (B) Are changes needed in EPA's risk assessment and risk management processes in order to address equity considerations?

The Sub-group decided to focus on several aspects of equity—race, age, gender and income. The first three aspects have links with traditional health effects information. As income is a marker for some aspects of quality of life, it may also be relatable to additional factors dealing with health status and thus susceptibility to environmental exposures.

To make risk-based decisions, EPA has a formal risk analysis process which consists of two inter-related, but separate, process—risk assessment and risk management. In making risk-based decisions (i.e., risk management), EPA uses information developed in the risk assessment process to guide the decision-maker in determining the appropriate action to take given the situation. In making the risk management decision, managers consider a number of factors along with human health risk. This is the phase of the decision-making process where many of the hard-to-quantify factors are considered by the decision makers. The factors considered in the risk management phase range from social concerns to economic concerns, from acceptance by the communities affected to technical feasibility. There is an opportunity to consider relevant environmental equity issues during the risk management process.

Risk assessment characterizes the likelihood of a chemical agent or mixture to cause an adverse health effect for humans and on a case-by-case basis provides a numerical way to gauge the possible impact on a population(s) if exposure were to occur. It provides an estimate of the probability that human exposure to a chemical agent will result in an adverse health effect to the exposed individual, or an estimate of the incidence of the effect within an exposed population. The product of risk assessment is usually a statement of probability of an effect given a certain duration, frequency and magnitude of exposure to the environmental pollutant. Risk assessment as conducted at EPA, conforms to the Agency's published guidelines and is usually comprised of four distinct parts: Hazard Identification, Dose-Response Analysis, Exposure Assessment, and Risk Characterization.

Risk management is the decision process whereby officials decide what actions are appropriate given the risk and other important factors. The basic framework for this decision-making process is similar across agency programs; however, each program must include certain factors as dictated by the statutes under which authority they are regulating.

In the risk management process, decisions are made regarding acceptable levels of exposure and risk. In the past more attention has been given to the scientific, technical, and science policy features of risk assessment than the components of the risk management process. In contrast to risk assessment, there are at present no published, peer-reviewed Agency guidelines for risk management decision-making.

5.1 PRINCIPAL FINDINGS

Both the risk assessment and the risk management processes can affect how the Agency addresses equity concerns. Hazard identification, dose-response assessment, exposure assessment, and risk characterization provide the analytic tools for identifying disproportionately impacted populations in terms of health. In the risk management process, criteria are identified to help guide the weighing of information. The Agency's choices in specific risk decision-making situations regarding disproportional impacts are made based on these criteria.

The four components of EPA's risk assessment process as defined in risk and exposure assessment guidelines do not exclude the consideration of age, gender, racial/ethnic groups. Age and gender and some racial/ethnic elements are traditional health topics and so are explicitly discussed in risk assessments conducted by the Agency as appropriate. Age and gender are familiar topics in exposure guidance; information concerning exposure traits of racial/ethnic groups are more limited. While the guidelines discuss some of these issues, the availability of data for use in risk assessment is problematic. As such, a case can be made for improving the availability of data. However, the guidelines state that when these data are available and adequate for analytical purposes, they should be used in the risk assessment process.

The Agency's risk assessments can be enhanced by more frequent considerations of human activity patterns that may be influenced by custom, social class, ethnic and racial culture. These sociological aspects may predispose populations to exposures to environmental toxicants. It may also be helpful in certain cases to present exposure analysis as a range of potential exposures and to take into consideration demographic characterizations of the exposed population, such as: age, gender, ethnicity and race. Likewise, quantitative estimates of risk probabilities should be displayed as distributions across the exposed population, considering the sensitive population groups that may exist in the overall exposed population. In consideration of environmental equity, it is important that the population group residing within the "high-end" of exposures be demographically characterized, where such information is relevant to the risk manager. Furthermore, to ensure that equity is considered and integrated in the regulatory decision, it is important that risk management guidelines be developed to promote equity considerations when selecting among regulatory alternatives.

One way in which risk assessments can be improved in terms of environmental equity is to determine the proportionality and distribution of environmental exposures and risk. Basic statistical analysis showing the cumulative frequency distribution of environmental exposures and risk would be useful for the purposes of identifying people residing at the lower 5%, the mean, the median and the upper 95th percentile in the estimated distribution of environmental exposures to the chemical agent dispersed from a source spatially and temporally. Once this is done, the U.S. Census could be applied to that particular geographical area to identify the age, gender, levels of income, race and ethnicity of the potentially exposed population according to the estimated cumulative frequency distribution of environmental exposures. This could permit quantitative analysis of the proportionality of exposures and risk according to demographic classifications of race, ethnicity, gender, age and income.

In addition, the exposure analysis can be improved through the further research and incorporation of human activity patterns that may be influenced by custom, social class, and ethnic and racial culture. Factors such as dietary food preferences, percentage of time spent indoors versus outdoors, and proximity of residence to sources of environmental pollution are examples of sociological variables that may predispose populations to exposure to environmental toxicants. In consideration of environmental equity, it is important to move away from generic exposure analyses to more site specific analyses that take these sociological aspects into account. Basic to the concept of environmental equity is thorough analysis and demographic identification of people whose activity patterns place them in the "high-end" of exposures.

5.2 EVIDENCE OF INCREASED RISK

There is health evidence suggesting that exposure and resulting health risk to environmental contaminants can be specific with regard to age, gender, race and ethnic groups. Economic factors, in so far as they serve as an identifier for a life style which can result in increased or decreased risk factors, may be relevant as well. To augment the health and exposure analysis in section two, the Risk Assessment Subgroup notes the following studies:

- The last complete NHANES survey showed that lead poisoning in children is more prevalent among inner-city poor, and blood lead is significantly higher in African-Americans and Hispanics when compared to U.S. children as a whole (ATSDR, 1988).
- Estimated lung cancer deaths in the U.S. attributable to indoor radon exposure is about 2-fold higher in males than in females, and remains higher even when adjusted for smoking (Nazaroff and Teichman, 1990).
- Epidemiologic studies of U.S. steel workers most heavily exposed to mixtures of organic pollutants in coke-oven emissions at by-product plants (e.g. at the topside of the oven) indicates that 90% were nonwhite. This group of workers had an 8-fold higher rate of respiratory cancer than in the general U.S. population (EPA, 1984).
- Fish consumption surveys indicate an association between average daily rates of freshwater fish consumption and race/ethnicity. For example, if the fish caught in a certain area are contaminated with a bioaccumulative pollutant (e.g., PCBs, dioxins, methyl mercury, DDT), then consumption of these fish will lead to exposure to these pollutants. The more that these fish are included in the diet, the higher the exposure to these pollutants will be. EPA has found that, on average, Asians are the highest consumers of fish, followed in order by Native Americans, African Americans, and Whites (EPA, 1991a).

In addition, certain ethnic populations tend to consume fish with a higher fat content. Fish with a high fat content bioaccumulate lipophilic (fat-loving) pollutants to a higher degree, thus, causing a higher exposure to these pollutants in the populations which prefer high-fat content fish.

There are not adequate studies of urban/rural poor that could elucidate the relationship between fish consumption and poverty. However, it is

likely that there are significant numbers of rural and urban poor people who are supplementing their daily intake of animal protein by catching and consuming fish caught locally. If these fish are contaminated by pollutants that bioaccumulate, then the pollutant exposures via fish ingestion for these consumers could be much greater than for the average recreational angler.

- Analysis indicates that pregnant women consuming fish contaminated by a bioaccumulative and lipophilic pollutant (PCBs, dioxin, methyl mercury) may accumulate these pollutants in their body fat and subsequently transfer the pollutant to their mother's milk. Pollutant exposures to the nursing infant may be up to 10-fold greater than the mother's exposure. (EPA, 1991b).
- Exposure of young children to environmental tobacco smoke from parental smoking, particularly during infancy, is causally associated with increased prevalence of acute lower-respiratory-tract infections, respiratory symptoms of irritation, middle ear effusions, reduced lung function, and a small reduction in the child's rate of pulmonary growth and development (EPA, 1990b).

No national baseline currently exists of population exposures and risk to environmental contaminants that is evaluated by age, gender, ethnicity, and race for all environmental media. Therefore it is not possible to statistically evaluate the proportionate risk burden by age, gender, ethnicity and race on a national scale. The situations discussed in this report suggest that environmental inequities could exist, but a quantitative evaluation of the issue is not possible using existing data.

5.3 FINDINGS ON COMPONENTS OF THE RISK ASSESSMENT PROCESS

The risk assessment process consists of four parts. The specificity of the data available for assessing the hazard identification, dose-response analysis, exposure assessment, and risk characterization affect the specificity with which the Agency can determine the risks faced by particular population subgroups.

5.3.1 Hazard Identification And Dose-Response Analysis

Hazard identification is the first stage in the risk assessment process. EPA evaluates available scientific evidence and decides whether an agent or mixture is likely to cause a particular adverse health effect. Specific population subgroups can become a focus if the available information is similarly related to a subgroup. Gender and age are commonly studied factors.

Information from epidemiologic studies has largely involved studies on the standing work force, i.e., exposures to healthy White male workers. Given this limited study population, the extrapolated hazards to the general population may not portray the range of consequences to children, the elderly, the sick and infirmed, females, racial/ethnic groups, or low-income populations. Hazard information from animal studies, however, has the potential to provide information on effects specific to gender and age. Gender is frequently accounted for and lately

more interest is being directed to age. These types of information are integrated into the risk assessment for humans as warranted. The dose-response analysis step in risk assessment is closely tied to the hazard identification information and so it tracks the available data accordingly.

When the Agency does have information about the susceptibility of certain subgroups in the population, this information is taken into account in the risk assessment. For example, children have been specially singled out as being at risk from exposure to lead. The elderly are sensitive to carbon monoxide, and particulate matter exposure. Asthmatics are a sensitive subgroup for sulfur oxides. There are other examples where health information for special population groups is key to the risk assessment finding and examples where such focus is not achievable.

5.3.2 Exposure Assessment

Exposure assessment, the third phase of risk assessment, evaluates the likely pathways leading directly or indirectly to human exposure to an environmental agent or mixture; estimates the magnitude, frequency, and the duration of exposure; and estimates the size of the exposed population and as needed documents other vital physiologic features that may be relevant.

In general, ethno-cultural and economic considerations are not incorporated in exposure assessments. However, such demographic categories may be useful markers for identifying population subgroups that have some likelihood of experiencing exposures significantly different from the average exposure and, thereby, possibly different health risks from the average population. Cultural specific behaviors, activity patterns, and food preferences vary significantly by ethnic and racial groups, and these patterns may define pathways of exposure to an environmental pollutant. For example, the importance of fish in the diet of certain Native American Tribes has a great impact on the exposure of these tribes to any contaminants found in the fish. If the fish that a group of Native Americans eat are contaminated, the Native American's environmental exposure to these contaminants will be greater than for the average population. In addition, preference for high-fat content and bottom-feeding fish (i.e., catfish, carp, crappie, and eel) by various races, ethnic groups, and low-income people can increase the exposure, and thereby the risk, for lipophilic contaminants. Further, cultural preferences for the consumption of internal animal organs, such as liver, brain, kidney, heart, liver or pancreas of crabs, lobsters, or the consumption of whole fish are important factors to consider in conducting the exposure assessment.

Economic circumstances may predispose certain populations to increased risk factors. For example, industrial activities often are located in parts of town inhabited by individuals of lower socioeconomic status. Low-income or poverty populations may lack the means to live outside the areas surrounding the polluting facilities. Urban and rural poor may subsist on fish caught in contaminated waters, or from home-grown vegetables, beef and dairy products that may be chemically contaminated from local industrial activity.

Time-use studies can depict human activity patterns within the population and are useful in estimating the duration of exposure to environmental contaminants in a particular setting. Such studies may reveal over-representation of certain racial groups in high-exposure occupations, e.g., Latinos as migrant farm workers exposed to pesticides. Also, as mentioned above, certain ethnic and racial groups may derive the bulk of their dietary animal protein from the consumption of fish.

6.0 RISK COMMUNICATION

The standard definition for risk communication is "any purposeful exchange of scientific information between interested parties regarding health or environmental risks" (Covello et al., 1988). Risk communication is seen as a "tangled web," with information flowing in many directions, between multiple sources and audiences, through formal and informal channels, and without explicit goals or objectives (Plough and Krinsky, 1987; Krinsky and Plough, 1988).

In its efforts to alert the public to risks, the Agency has sought to move beyond simply transferring technical information, recognizing the desirability of public involvement in the decision making process. The EPA risk communication manual (EPA, 1989a) highlights this goal:

The Agency does not view risk communication as a one-way street. It recognizes the need to impart information but also to involve the public in the decision-making process. The purpose of risk communication is not to allay the public or merely help them see [the Agency's] point of view.

Risk communication, by itself, cannot redress distributional inequities in risk. However, risk communication is an integral part of the risk management policies and programs that are intended to redress such inequities. The Agency's risk communication efforts have been criticized by environmental equity groups for failing to address the concerns of racial minority and low-income communities during the policy making and subsequent risk communication processes.

Equitable risk management efforts require equitable risk communication efforts. Equitable risk communication means ensuring that the Agency engages all affected parties at the beginning of and throughout the decision making process. Outreach and consultation are at the heart of an equitable risk communication program.

Underlying the relationship between equity and risk communication is the issue of empowerment. For the public, there is nothing more frustrating than to be given information on risks about which it can do nothing, or after the substantive decisions have been made (Kasperson and Palmlund, 1987).

Racial minority and low-income groups may experience particular frustration. Actual or perceived alienation from the political process—a process perhaps seen as ineffective or outright discriminatory—may steer these communities away from participating in the formal process of public hearings, often the extent of risk communication efforts. The groups perhaps most at risk may be least likely or able to participate in the decision making process.

6.1 THE RISK COMMUNICATION PROGRAM

Risk communication is primarily a responsibility of the program offices and regional offices. However, the Risk Communication Program (RCP), within the Office of Policy, Planning, and Evaluation, provides technical assistance to the program and regional offices and therefore sets the tone for all EPA risk communication activities. RCP engages in a variety of activities in four areas: training, problem-specific consulting and analysis, methods development, and coordination and outreach. RCP's training activities include several completed, ongoing, and proposed courses, workshops, and manuals for EPA and State

employees. The center-piece of the RCP's training is a two-day workshop in risk communication.

EPA has been responsible in large part for directly and indirectly generating much of the research in risk communication. The RCP has collaborated with program and regional offices, other agencies and organizations, and academics on specific problems for risk communication, including radon, the community-right-to-know program, hazardous waste siting and cleanup, and chemical risks. Other collaborative efforts have focused on more generic issues of risk communication methods. The RCP has engaged in a number of outreach efforts aimed at the general public. None of these projects or activities explicitly addresses environmental equity issues in risk communication. However, the materials contain valuable ideas about the process and content of risk communication that could be directed to address equity issues.

The subgroup's evaluation of EPA risk communication efforts consists of two components. The first component examines the four seminal documents that form the core and set the tone of EPA's risk communication efforts: *The Seven Cardinal Rules of Risk Communication* (Covello and Allen, 1988), *Explaining Environmental Risk* (Sandman, 1986), *Improving Dialogue with Communities: A Short Guide for Government Risk Communication* (Chess et. al., 1988), and *Improving Dialogue with Communities: A Risk Communication Manual for Government* (Hance et. al., 1988). The second component of the subgroup's evaluation examines risk communication within the context of regulatory programs. The reviews begin with the Radon and Community-Right-To-Know programs, the two most prominent risk communication efforts within the RCP. Because pesticides, air toxics, and lead potentially impose a high risk burden on minorities, these programs are also examined.

6.2 GUIDANCE FROM SEMINAL RISK COMMUNICATION DOCUMENTS

Of the four seminal risk communication documents, *The Seven Cardinal Rules of Risk Communication* (Covello and Allen, 1988) has become the *de facto* guideline for conducting risk communication at EPA. The seven cardinal rules, presented as common-sense guidelines, are a distillation of much of what we know from research and experience: "Accept and involve the public as a legitimate partner, plan carefully and evaluate your efforts, listen to the public's specific concerns, be honest, frank, and open, coordinate and collaborate with other credible sources, meet the needs of the media, and speak clearly and with compassion." *Explaining Environmental Risk*, (Sandman, 1986) is a more discursive treatment of these themes, intended to help decision-makers understand why some strategies for dealing with the media and the public succeed while others fail. *Improving Dialogue with Communities: A Short Guide for Government Risk Communication* (Chess et al., 1988) and *Improving Dialogue with Communities: A Risk Communication Manual for Government* (Hance et al., 1988) give detailed practical guidance to Agency personnel responsible for the development of risk communication programs. Largely based on interviews with numerous practitioners from academia, industry and government, the guidance manuals have been criticized as "etiquette books for risk communicators" (Otway and Wynne, 1989). Despite the criticism, they represent the state-of-the-art in risk communication.

Age may also predispose populations to different exposures and perhaps also to increased risk depending upon dose-response relationships. Nursing infants may have higher exposures than adults to bioaccumulative pollutants (EPA, 1991b). The susceptibility to the effects from exposure to a contaminant may increase in certain segments of the population with immune systems that are not functioning at their maximum (i.e., newborns and the elderly).

One- to six-year old children are more likely to ingest soil than any other age groups. If the soil that these children ingest is contaminated, their exposures to these contaminants via this route of exposure will be higher than for other age groups. Children also tend to have different diets than adults, i.e., children generally consume greater quantities of fruit and milk than adults. This may predispose children to certain exposures to substances that are found in these foods. Further, children have different physiologic rates and capacities than adults, which may affect the exposure and dose-response relationship to those substances to which they are exposed.

The influence of gender on activity patterns may lead women or men to greater exposures. Home workers are predominantly female; their exposures to indoor air pollutants in home micro-environments will be of longer durations than for males. Certain occupations are dominated by male workers, such as the chemical industry.

Income levels, may define a population of urban/inner city dwellers whose residences are co-located with small businesses or large enterprises which emit contaminants to the nearby local environment. As an example, undesirable exposures to solvents or other vented emissions could be a problem.

EPA has developed an Exposure Factors Handbook (EPA, 1990d). A review of the handbook indicates a paucity of reliable exposure factors relative to human activity patterns and cultural-specific behaviors. The available studies on human activity patterns (percent time spent in various activities while at work, home, and recreation) are skewed toward middle income individuals, but are generally not delineated by race/ethnicity (EPA, 1990c).

EPA has recently published Exposure Assessment Guidelines. The guidelines address the topics of age, gender, patterns of activity and identify some special exposure situations among ethnic/cultural and racial groups. The guidelines emphasize the advantages and use of demographic information in planning and conducting exposure assessments, and the identification of appropriate population groups for study given the toxic endpoint of a particular chemical (neurotoxicity, male/female reproductive toxicity; developmental effects, carcinogenicity, immunotoxicity). There is no other compendium of exposure assessment guidance or directive that emphasizes special demographic issues, other than in the pesticide program. OPP routinely tracks age-specific diet consumption levels in conducting their exposure assessments.

Given the potential variation in susceptibility and exposure among certain groups of individuals in the population, estimation of the distribution of population by age, gender, race, and ethnicity may be necessary to protect each of these populations adequately. However, without adequate information about the variation in susceptibility and exposure relative to these subgroups, the demographic data will be of little value in addressing the risk to the subgroups.

5.3.3 Risk Characterization

Risk characterization is the final step in risk assessment where all factors are integrated into a summary and concluding statement about the nature and extent of possible health impact resulting from an exposure.

It is the practice that if the available data base (i.e., health and or exposure) provides insight into such factors as age, gender, race/ethnic susceptibility that these elements are considered. The risk assessment guidelines vary in degree about explicitly making reference to special population issues. While certain health endpoints or specific risk management decisions (i.e. site-specific Superfund cases) may naturally focus on particular population groups, other risk assessments supporting national regulatory initiatives focus on an average person who might be expected to have an average susceptibility to exposure to toxic contaminants in the environment. This is a consequence of not having data rather than a reluctance to deal with the issues raised by incorporation of such data in the analysis. In many cases, the Agency is unable to characterize the possible risk to a target population in terms of vital demographic factors.

5.4 FINDINGS ON THE COMPONENTS OF THE RISK MANAGEMENT PROCESS

As discussed earlier, the risk management/decision making process has certain features that are common to all programs. However, each program has unique features in their risk management decision-making process, depending on which environmental statute is applicable. The practice of risk management varies somewhat across the Agency.

While some equity considerations find their way to the risk management table because they are definable in the risk assessment process, there are currently no other mechanisms such as published guidelines or other institutional elements which guide the decision logic of addressing equity or in choosing among equity issues.

5.5 CONCLUSIONS

- The risk assessment process is not exclusionary with respect to age, gender, racial/ethnic groups or socioeconomic status because the process does allow for these factors to be taken into account in the analysis. However, data on these factors are not always available to be used in the analysis.
- There is evidence that certain population groups experience increased exposure and risk due to different activity patterns, cultural behaviors, diets, and physiological differences.
- While peer-reviewed, published guidelines exist for risk assessment, there are no guidelines for the risk management process. Risk management decisions can greatly influence how the Agency addresses environmental equity issues.

The four publications lack explicit discussion of equity issues, yet guidance for more equitable risk communication efforts can be extracted. For example, the admonition to "involve all parties that have an interest or stake in this issue" (Covello and Allen, 1988) is important in making risk communication more equitable to all involved parties.

Below are brief discussions of how the guidance documents shape the Agency's risk communication goals, process, and content.

6.2.1 Goals

None of the four publications aims explicitly at race, ethnicity, and income status, though each explicitly and implicitly recognizes that issues of control and equity (or fairness) underlie most risk controversies. Sandman asserts that "it is hardly coincidental that the risks the public tends to overestimate generally raise serious issues of equity and control" (Sandman, 1986). For example, though EPA asserts that state-of-the-art hazardous waste facilities are completely safe, the public often sees them as very risky. On the other hand, it has been difficult for EPA to generate concern and action about radon—one of EPA's highest ranked risks—because it is dispersed and naturally occurring.

The public is particularly concerned about the "outrage factors" (Chess et al., 1988)—factors beside the scientific data of hazard evaluations, monitoring, and risk assessments. Covello and Allen stress this point: "People in the community are often more concerned about such issues as trust, credibility, competence, control, voluntariness, fairness, caring, and compassion than about mortality statistics and the details of quantitative risk assessments." These do not affect environmental risk, *per se*, but are an intimate part of the risk communication process. In general, "risks that seem fair are more acceptable than those that seem unfair" (Chess et al., 1988; Hance et al., 1988). The EPA's risk communication workshop, which is based on these publications, emphasizes that fairness is an underlying factor in the public perception of risk. Failure to account for fairness as an attribute of risk is one reason why expert assessments of risk differ markedly from public assessments. Inequitable distributions of risk, such as the imposition of disproportionate risk burdens on racial minorities and the poor may be perceived by those communities as greater risks than risks that have less obvious inequities (e.g., radon).

6.2.2 Process

Covello and Allen (1988) emphasize that "[a] basic tenet of risk communication in a democracy is that people and communities have a right to participate in decisions that affect their lives." Racial minorities and low income groups may feel wholly excluded from the process, or the issues of greatest concern to them may be dismissed peremptorily. The gravest problems of risk communication tend to arise when "citizens determine that the issue is important, that the authorities cannot be trusted, or that they themselves are powerless" (Sandman, 1986). A good communication process should therefore build trust in the Agency, allow the public to influence decisions, and convey the message that issues of concern to the community will be taken seriously. Despite the Agency's 20 year focus on human health, some believe the Agency is more concerned with White, middle classes issues such as leisure and recreation, wildlife and wilderness preservation, and resource conservation than with the problems faced by minorities and low-income groups (Bullard, 1990).

Involving the community early and substantively demonstrates the Agency's confidence in the public and its willingness to share power and take public concerns seriously. Placing notices in the *Federal Register* and holding large public hearings may be broadly defined as risk communication efforts, but they are generally inadequate for many communities. Evidence suggests that these processes are inaccessible to low-income and racial minority groups (Mohai, 1991). Therefore, the Agency has attempted in certain site-specific programs such as Superfund, to design a process that is "citizen-focused," and to learn from the community what type of involvement is preferred. These smaller, more informal meetings of people with similar concerns are generally more constructive and effective forums for the exchange of ideas.

Any effective risk communication process must involve all parties with an interest or stake in the issue at hand. Ironically, the groups (such as the poor and racial minorities) who may be at most risk may also be the most difficult to "reach." It is important, therefore, to devote time and energy to the slow, hard work of building bridges with other legitimate and representative groups. Chess et al. cite this factor in their chapter on building trust and credibility: "Enlist the help of organizations that have credibility with communities" (Chess et al., 1988). This facilitates two way communication—crucial in any risk communication effort—but particularly so with racial minority and low-income communities where people may perceive that EPA (and the government in general) does not consider their concerns. In a number of cases, the Agency has initiated dialogues with such groups on specific issues. For example, the Agency has had discussions with farmworkers on pesticide exposure issues that are particularly important to them.

A related issue is the use of community-appointed experts to assist in the interpretation of technical materials. Because they are often unable to pay for it, poor and racial minority communities have limited access to expert assistance on environmental issues (Freudenberg, 1984). This limits the rate at which poor and racial minority groups can "get up to speed" on the technical aspects of environmental issues and reduces their effectiveness in adversarial proceedings in which the technical issues play a central role. Recognizing the need to provide communities with access to technical expertise, the Agency has begun to explore ways, such as Technical Assistance Grants, that will provide this help to communities.

6.2.3 Content

There has been much written about the most effective content of risk communication materials, including how to present risk numbers and how to make appropriate risk comparisons. The documents *Improving Dialogue with Communities: A Short Guide for Government Risk Communication* and *Improving Dialogue with Communities: A Risk Communication Manual for Government*, written to apply to all communities, give extensive, practical advice on effective content. This advice can be applied to low-income and racial minority groups, but it would be more easily used if accompanied by information that discusses the particular needs and preferences of low-income and racial minority communities.

The documents emphasize the need to involve the community to find out what information people want to know and in what form. This is especially important with low-income and racial minority groups whose concerns and assumptions may differ from those anticipated by EPA officials. The materials of the risk communication materials effort should be in the appropriate languages to reach affected racial minority and ethnic groups. The materials must be relevant, understandable, and answer the questions of the intended audience.

6.2.4 Summary

The Agency's seminal risk communication documents provide sound advice that can be applied to some of the equity issues facing EPA. However, more guidance is needed that illustrates these general principles with explicit reference to the needs and concerns of racial minority and low-income groups. The Agency may need to develop new methods and recruit new message carriers to communicate with these communities. Risk communication efforts in Regions I, III, and V will contribute sound, practical advice and model approaches needed to advance the Agency's risk communication efforts.

6.3 RISK COMMUNICATION IN REGULATORY PROGRAMS

The following discussion offers snapshots of five regulatory programs within EPA.

6.3.1 Radon Risk Communication

EPA (1987g) estimates that between 5,000 and 20,000 lung cancer deaths per year may be due to radon exposure in the home. The main thrust of the Radon Action Plan has been risk communication to encourage the public to test their homes and mitigate if they find elevated levels of radon. The Agency is and has been engaged in a variety of risk communication activities at the national level and through state agencies, including:

- The maintenance of a toll-free radon "hotline;"
- The wide dissemination of the *Citizen's Guide to Radon* (EPA, 1986b), which has been the primary risk communication vehicle;
- The dissemination of more specific informational materials such as *Removal of Radon from Household Water* (EPA, 1987h) and *Radon Reduction Methods: A Homeowner's Guide* (EPA, 1989b);
- The development and dissemination of public service announcements (PSAs) for broadcast and print media;
- The preparation and distribution of a pamphlet for journalists stressing the newsworthiness of the radon issue (EPA, 1989c).

In addition, the Agency has collaborated with several states in media campaigns to increase public awareness. In the fall of 1990, the Agency sponsored a National Radon Action Week in collaboration with the American Lung Association, the American Cancer Society, the American Medical Association, the American Academy of Pediatrics, the National Congress of Parent Teachers Associations, the National Education Association, and the Consumer Federation of America. The Agency is presently working with the Advertising Council to explore a range of public relations and direct marketing strategies (CRCPD, 1990).

Many states have initiated their own efforts in collaboration with EPA, using funds from the State Indoor Radon Grant (SIRG) Program. Many of these efforts involve surveys of residential or school radon levels, but some states are using the funds to develop more imaginative risk communication programs. For example, Kentucky is creating a community and regional radon information/education outreach program. The program is intended to reach individuals in local Parent Teachers Associations, the American Cancer Society, and the public health community, as well as agricultural and home extension agents.

This is probably the most extensive risk communication effort of any EPA program. Unfortunately, the communication of the risk from radon has not resulted in action by many households. EPA estimates that only about 5% of dwellings have been tested for radon, and only 8% of those for which mitigation is necessary have actually mitigated (EPA, 1990b).

Equity Issues in Radon Risk Communication. As a natural hazard, it may seem strange that equity should be a concern in dealing with radon, but there are actually several problematic issues.

There has been a considerable amount of research on risk communication with regard to radon, but all of this focuses on homeowners. As Sjöberg (1989) concludes following a review of this research for EPA:

Virtually all research so far has been conducted with homeowners so the social strata that have been represented have not been representative of the whole population. We do not know how people who rent their homes respond to radon risk, or how involved their landlords are in monitoring and mitigating such houses.

As noted in Table 3 (Section 2.1.2), a significant percentage of racial minorities do not live in homes they own.

The research literature does not contain an explicit analysis of equity with respect to risk perception of radon, willingness to take remedial actions, and effective risk communication. Empirical studies do suggest, however, that low-income and poorly educated people are more likely to perceive radon risks as less severe than the other risks they face, and are less likely to test for radon or mitigate if they discover elevated levels (Doyle et al., 1989). It is believed that the lower rates of testing among low-income groups reflect concern over the potentially high cost of mitigation if a problem is discovered, rather than the cost of purchasing test kits, which are relatively inexpensive.

Most testing for radon is conducted during the purchase and sale of houses, and EPA's risk communication efforts have focused almost exclusively on homeowners as the target audience. One potentially large audience that has not been targeted in these efforts are owners and managers of multi-family housing

units such as apartments. While those living in units above the second story may not face a radon problem, and therefore do not need the risk information, there are a significant number of rental units at the basement and first floor levels. Those individuals living in basement apartments, which are often the least expensive units, may be especially at risk. Congress has asked Housing and Urban Development (HUD) to develop a program on testing and mitigation in public housing, but there has been little activity as yet.

In terms of content and presentation, many of the risk communication materials produced at both the state and federal levels are of extremely high quality. Enormous effort has been put into the development of these materials to ensure that they present the necessary information in an appealing and comprehensible form for the general public. Experts in risk communication and reading comprehension reviewed many of the materials. Focus groups with members of the public were used both to develop and test the materials. Indeed, this is an ongoing process, and a substantially revised *Citizen's Guide* is to be released this fall. Unfortunately, the content is again geared towards homeowners. There are no materials tailored to rental properties—either for the tenants or the landlords. The risk communication materials offer no advice to renters about how to deal with landlords who refuse to test, or what renters can do if they find their dwellings have elevated levels of radon. Similarly, there is no information explaining the incentives for landlords to test and mitigate.

Even if low-income homeowners do test for radon, the necessary mitigation work may be prohibitively expensive. Some of the mitigation options recommended by the EPA (e.g., in the *Radon Reduction Methods: A Homeowner's Guide*) may have significant energy costs. For poor households, the energy costs of opening windows and ventilating crawl spaces may outweigh gains in reduced radon risk. Risk communication on mitigation should, therefore, include some discussion of this trade-off, alternative measures that may be cheaper, and the availability of any grants, subsidies, or tax incentives that might apply.

EPA's radon communications materials recommend that people contact their state radon office for additional information on the risks of radon and how to test and mitigate. Many states send out packets of information, including the list of testing companies that meet EPA's Radon Measurement Proficiency (RMP) Program quality controls. Unfortunately, many of these offices can only be reached by calling a toll number during the most expensive calling period. This adds an additional barrier to testing, and is a barrier for those who cannot afford such calls. Furthermore, EPA's existing toll-free hotline, which provides only a prerecorded message offering to send EPA's introductory brochure, might be enhanced.

Finally, smokers who are exposed to radon have an increased risk of lung cancer over those who only smoke or are only exposed to radon. Since a higher proportion of low-income and racial minority groups smoke, there would be an increased overall risk to radon from these groups. EPA, however, is extremely cautious about including a discussion of the relationship between radon and smoking in the risk communication materials. This reluctance is based on the assumption that both smokers and non-smokers may face unacceptable risks if they live in a house with elevated levels of radon, and the fear that focusing on smoking may lead non-smokers to believe they are not at risk. Emphasizing smoking may also have an adverse effect by alienating smokers, who then also refuse to test or mitigate. While the *Citizen's Guide* presents little information about the relationship between smoking and radon, it does recommend that

individuals can reduce their risks by stopping smoking themselves and discouraging smoking in their home.

6.3.2 Community Right-To-Know

For the purposes of this paper, community right-to-know (CRTK) is defined broadly, encompassing the Emergency Planning and Community Right-to-know Act (EPCRA) of 1986 (also known as SARA (Superfund Amendments and Reauthorization Act)), and in addition, CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act), the Oil Pollution Act of 1990, the Pollution Prevention Act, and the Clean Air Act of 1990. Two program offices, the Chemical Emergency Preparedness and Prevention Office (CEPPO) (within the Office of Solid Waste and Emergency Response (OSWER)), and the Office of Pollution Prevention and Toxics (OPPT), have the main responsibility for implementing EPCRA, but many other EPA offices, have been involved in developing and implementing the CRTK program. In some important respects, the CRTK program extends beyond EPA to many other federal agencies, to state and local governments, and to non-governmental organizations. This section discusses several aspects of CRTK that have implications for equity issues.

Availability of Information to Racial Minority and Low-Income Groups. Under the CRTK program, most groups have equal potential to obtain the technical and other risk information that accompanies or flows from regulation development if it is requested. However, the existence of this source of information is not widely known, except by interested industry representatives, environmental professionals, and other researchers. Further, this information is, by its nature, often highly technical and, therefore, not easily understood by the general public. Specifically, three barriers to low-income and minority groups obtaining and using this information have been identified:

Language barriers

Very little of the formal CRTK and EPA-wide public relations output is presented in Spanish or other non-English languages. The technical and rule making material is virtually all in English. It is rare to find heavy participation by Hispanic or other linguistic minorities in EPA rule making hearings or other large-scale public meetings.

Metropolitan Proximity

All EPA regional and headquarters offices are in major cities. Government repository libraries (which contain some EPA materials and usually have librarians capable of assisting interested patrons) tend to be in major cities and within sizable universities. Thus, rural populations have relatively less access to information or assistance available through these mechanisms.

Education Level Bias

Environmental issues and information are inherently technical and are sometimes complex. A person with some educational background in those or related issues is in a better position to identify and to be able to make use of much of the data that we have broadly included in CRTK information. Access to facilities with computers are also required to make use of some of EPA's risk data.

Tailoring Messages to Target Audiences. By and large, EPA's technical and regulatory output comes in one style—technical—containing many legal and scientific terms that appear to be jargon to other readers; it assumes a large amount of background knowledge on the part of the readers. The process of making this information available to a wide audience is a resource-intensive task. So far, it currently has been undertaken for certain key areas, with plans to expand it as resources are available.

In some cases, tailoring of EPA's message has been successfully accomplished. The usual motivation has been to encourage compliance with some program among the regulated community. As examples, the Underground Storage Tanks program has produced very readable compliance guides for the proprietors of gas stations and other businesses likely to have such tanks. The certified pesticide applicator training program takes into account the educational levels and language skills of those who are to be trained and certified. Some labeling and other aspects of pesticide use explicitly deal with Spanish-speaking farm workers.

In those cases where EPA has expended efforts to communicate directly and clearly, documents have been written in straightforward English, sometimes with careful attention to graphical content, assuming moderate skills on the part of the intended readers. The annual Toxic Release Inventory (TRI) national reports, some of CEPPPO's documents and other general EPCRA documents (eg. "Why Accidents Happen," "Chemicals In Your Community," and a brochure explaining EPCRA section 311/312 requirements to small businesses), and some materials from the Superfund program are among the examples of successful efforts.

The Outreach Committee of the EPA Title III Implementation Work Group occasionally turned its attention to special language needs. This resulted in the translation into Spanish of at least one short brochure explaining the use and access of TRI data. CEPPPO has recently made arrangements to have the "Chemicals In Your Community" brochure translated into Spanish, and has received requests to have other materials translated into Spanish and some Indian languages.

6.3.3 Air Toxics

Although the risks considered by the Community Right-to-Know (CRTK) program and the Air Toxics program are similar, there are enough differences in the sources and nature of the risks that separate risk communication efforts are necessary for these two programs. In particular, the CRTK programs deal mainly with *releases* of pollutants to various environmental media (often episodic releases), while the air toxics programs are concerned with ambient *concentrations* and human exposures (via a single medium), often from multiple, chronic, and/or unknown release sources. The Air Risk Information Center (Air RISC), located at EPA's Research Triangle Park facility, has produced one monograph and three pamphlets (EPA, 1991c,d,e,f) on communicating air toxics risk issues. Information was not available

as to how widely these materials have been disseminated or whether they (or any other written or oral risk communication activities emanating from EPA headquarters) have enabled significant numbers of citizens to participate in dialogue about air toxics problems.

Review of Air RISC Materials. Air RISC has produced several quality documents that address equity concerns. The three pamphlets that Air RISC has produced are readable, graphically attractive, understandable, and unusually complete in their discussions of uncertainties, costs and benefits, risk comparisons, and the importance and legitimacy of public perceptions about risk. However, these pamphlets do not directly address racial and income factors as they affect exposure, susceptibility, and, thereby, risk.

The monograph on "Air Pollution and the Public" is particularly praiseworthy. It contains an extensive discussion of the variety of process and substantive goals of a risk communication program, and of the variety of target audiences that should be identified. However, the treatment of this latter issue is silent with respect to racial and income equity. Nevertheless, the document does encourage the environmental official to "consider groups based on common demographic, educational, or vocational interests, which will not necessarily be within the geographic or political boundaries (of the exposed community)," advice which could be interpreted to apply to racial or income groups.

Moreover, the section on *how* to communicate to different audiences is very sensitive to equity issues. The document advises the agency official to tailor the message to the appropriate educational level (without being condescending), to consider that cultural and sociological factors may influence both risk perception (and benefits perception) and how people view authority figures (giving as an example an allegedly successful "tailored" risk communication to Portuguese-speaking fishermen in Massachusetts), and to pay careful attention to both the questions people ask as well as the questions left unasked because of possible confusion, incomprehension, or fear.

6.3.4 Pesticide Programs

Risk communication and equity are prominent problems for the Office of Pesticide Programs (OPP) because so many of the migrant and seasonal farm workers who are exposed to pesticides on the job are poor and racial minority groups. Risk communication is especially difficult because of low-literacy rates and the diversity of languages. Moreover, the population is dispersed over a wide area and, in the case of migrant workers, constantly on the move. Finally, as recent immigrants, or illegal aliens, many workers are especially suspicious and distrustful of any government authority.

Pesticide Labels and Risk Communication. The label of a registered pesticide is required to convey information concerning its contents, potential hazards to human health and the environment, and directions for use. Any regulation which applies to the use or handling of a pesticide product must be included in the label. Pesticides are placed in one of four toxicity categories. The least toxic are not required to carry any particular hazard labeling. Those in the other three categories must carry one of the following signal words (in order of increasing toxicity): "CAUTION", "WARNING", or "DANGER." The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) also requires that any pesticide containing

a substance highly toxic to human health shall depict a skull and crossbones figure on the label along with the word "POISON" in prominent, red letters. On some agricultural pesticides, these words are written in Spanish as well as English. The signal words are found near the top of the label, underneath the trade name and chemical content information. Below the signal words are precautionary statements advising users of the type of hazard and protective measures to take, for example, whether gloves or goggles ought to be worn. Also included in the precautionary statements is information on how to administer first-aid in case of poisoning, and in some cases a note to the physician. Hazards to the environment and wildlife are placed below the statements regarding human health. For the user, the label is, therefore, the main source of information concerning the potential dangers and safe use of a particular pesticide.

Under FIFRA section 2(q)(1)(E), a label is required to be written in a way "likely to be read and understood by the ordinary individual under customary conditions of purchase and use." The label language assumes literacy at the secondary level of education. Those with low literacy skills or whose first language is other than English may have trouble understanding the label warning. Many agricultural pesticide labels contain a warning in Spanish not to use the pesticide until the label has been fully explained. Some registrants have chosen to translate the entire label for certain products into Spanish.

The high rates of illiteracy among minorities and low-income groups compounds the communication problems with these groups. Finding a way to communicate warnings to those with low literacy skills has been a particular challenge. During the mid-1980s a label utility workgroup was established within EPA to explore the use of pictograms or symbols, as well as other ways to make the labels easier to understand. A contractor was hired to interview consumers and suggest ideas in a report, but no action has been taken since the report was issued. At this time, another work group has been formed to take a look at these and other issues involving labels. Of particular concern is the adequacy of labels on household pesticide products in communicating information about potential health and environmental hazards. EPA plans to address this concern during the re-registration process for household pesticides (EPA, 1991).

Farmworker Protection: The Worker Protection Program. Final regulations on Worker Protection Standards are due out within the next year. They will apply to workers on farms, and in forests, greenhouses and nurseries. The regulations are a response to the inadequacies of current standards in protecting the health of agricultural workers, as presented in the background material for the Worker Protection Standards proposed in 1988 (Federal Register, July 8, 1988).

The new regulations will cover a variety of activities and topics, including: increased training in pesticide application, use of protective gear, notification of agricultural workers of what pesticides have been used and where they have been applied, reentry intervals for more toxic pesticides, and the availability of soap and water to wash off residues. The key to these efforts lies in education and training for agricultural workers, including farm workers. Much written material is already available in Spanish and English. This material describes safety practices, appropriate types of protective gear, how to interpret label information, and what to do in case of an accident. In addition, slides and video presentations are being prepared in both Spanish and English.

The task of relaying this information, however, is enormous. The *Federal Register* notice of the proposed Worker Protection Standards estimated that 2.3

million workers are exposed directly or indirectly to agricultural pesticides. A large portion of this number includes migrant and seasonal farmworkers. In the states of California, Oregon, and Washington it is estimated that 80% of the migrant farm force is Latino (Vaughan and Nordenstam, 1989). Many of them have limited education and read at about a 5th grade level in their own language. Seasonal farmworkers are of varied ethnic backgrounds. In some areas, Haitians and Asian immigrants have also taken up farm work. Outreach to farmworkers will therefore require extensive efforts in cross-cultural communication.

While much of the safety training materials are well illustrated, it is recognized within the Occupational Safety Branch that these materials alone will be of marginal value in reaching farmworkers with little formal education. These materials will be most useful in aiding those who will teach the farmworkers about safety practices.

In preparing materials for farmworkers, the Occupational Safety Branch of OPP intends to make them concise and understandable. One source of advice in preparing the materials has been staff of Latino background with experience in the Peace Corps and knowledge of farmworkers' conditions.

Grower organizations, the Cooperative Extension Service of USDA, and public service organizations are important channels for reaching the growers with new information on regulations as well as training materials on pesticide safety. To reach the farmworkers, OPP plans to communicate through farmworker organizations, which will do the necessary training. Two organizations which are scheduled to receive funding include the National Migrant Resource Program (NMRP) and the Association of Farmworkers Opportunity Programs (AFOP).

The NMRP is associated with the Migrant Health Project in Texas; the funding is for migrant health, which includes health hazards from pesticides. AFOP is an association of farmworker organizations that are primarily involved in employment training and upgrading job skills. Through an inter-agency agreement, funds have been allocated to AFOP for safety training. The purpose of the funding is to train those individuals chosen to be pesticide safety trainers by their respective organizations. These trainers will go out into the fields to meet with farmworkers in their camps after working hours. Farmworker organizations often use mobile classrooms or provide transportation in order to get the worker to the classes. AFOP is convinced that only by training the farmworkers in small groups, where the workers feel free to ask questions, will this training be effective. The need for culturally-sensitive materials for other groups, such as Haitians and Laotians are under consideration.

In addition to the Worker Protection Program, the Communications Branch of OPP conveys information about risks associated with pesticides to labor and farmworker groups. The Communications Branch regularly contacts farmworker organizations when an announcement is considered relevant to farmworkers. For instance, the announcement of the agreement to restrict the use of the pesticide parathion because of occupational safety concerns was communicated to the United Farm Workers, Friends of the Farmworkers, and the National Association of Community Health Centers.

6.3.5 Lead

The EPA lead programs are another example of an important and highly visible risk for which relatively little formal risk communication materials exist. The Office of Water has produced several pamphlets on lead in drinking water (dated

April 1987, December 1988, January 1989, and April 1989). In addition, the Office of Water (OW) is drafting a document—*A Primer: Developing a Community-Based Public Education Program on Lead in Drinking Water*, (October 6, 1989) which grew out of a pilot public education program that EPA conducted in Raleigh, North Carolina. This document is designed largely for water suppliers. EPA's final regulation for lead in drinking water requires public water suppliers to deliver educational materials to consumers. EPA is developing general materials based on the Raleigh experience and will be providing them to public water suppliers in camera-ready form. OW will publish final guidance and encourage public water suppliers to work with local public health agencies.

Review of Materials from the Office of Water. The various pamphlets are very informative and comprehensible to a wide variety of audiences. Issues of special concern to racial minorities and the poor are raised and generally dealt with sensitively. For example, the pamphlets are not just aimed at homeowners, but at renters in large apartment buildings (who may not be able to remove lead effectively by flushing their taps each morning). The pamphlets recommend that people test their household water for lead, yet they do not provide information as to whether subsidized or inexpensive tests might be available (except in the case of the pamphlet "Get the Lead Out"). OW has research underway to develop inexpensive field kits.

A good example of how an issue is addressed in a way that will be helpful to low-income families is the discussion on the routine flushing of household taps. Although EPA notes that such a measure will only increase a house's water bill by approximately 25 cents per month, the pamphlets take pains to suggest that households can use the flushed water to wash floors or water house plants, or can bottle the water coming from the tap after it has been flushed for later use—in both cases, reducing the small but possibly significant cost of incremental water usage. Although these suggestions may in fact have been motivated by water conservation rather than cost-saving considerations, they will be appreciated by readers who have serious financial concerns.

Broader Equity Issues in Lead Risk Communication. There appears to be some sentiment among some lead pollution activists that EPA and other agencies only stepped up their efforts to abate lead exposure when lead was found to be a serious problem for populations other than inner-city racial minorities. The allegations that EPA's attention to lead pollution in general reflects a lack of concern about the health problems of certain populations is unsubstantiated. However, the fact that these sentiments exist should be borne in mind by EPA in conducting future risk communication activities.

In fact, EPA has already taken action to reduce the amount of lead in gasoline, which contributed to a reduction in average blood lead levels over the past 10 to 20 years from 15 micrograms per deciliter ($\mu\text{g}/\text{dl}$) to 5 $\mu\text{g}/\text{dl}$. However, since the Agency's action to reduce lead in gasoline, new scientific research demonstrated that harmful effects occur at blood lead levels previously considered safe. Based on this new information, the threshold level for lead toxicity concern has declined steadily. In response to this new scientific information on lead, EPA developed a strategy to reduce lead exposures to the fullest extent practicable, with particular emphasis on reducing the risk to children—the population at greatest overall risk. Implementation of this strategy is intended to reduce elevated blood-lead levels in the nation's children and, given that a disproportionately large percentage of

children from minority and low-income families have elevated blood lead levels, will have a greater impact on children in these high-risk groups.

Critics of EPA's lead programs have indicated that EPA's emphasis on particular exposure pathways reflects a biased avoidance of the exposures of greatest concern to poor and racial minority citizens. According to the Alliance to End Childhood Lead Poisoning (AECLP), exposure to lead via drinking water contributes only 1 to 2 $\mu\text{g}/\text{dl}$ or less to the background blood lead concentration (which may exceed 10-20 $\mu\text{g}/\text{dl}$ in high-risk cases). EPA has stated that the three major sources of lead contributing to blood-lead levels above 10 $\mu\text{g}/\text{dl}$ appear to be: (1) lead-based paint, (2) urban soil and dust, and (3) drinking water. The Agency is directing its risk communication efforts to provide information on exposure from these pathways for all groups that may be affected by these exposure pathways.

Further, EPA is currently working on the development of model course curricula for inspectors, supervisors, workers, and designers to address the problems associated with the removal of leaded paint. In addition, a brochure for parents and day-care providers that will provide information on the hazards of lead exposure and how to reduce these hazards is under development.

6.4 CONCLUSIONS

Neither the Risk Communication Program in general, nor the specific efforts in risk communication, have explicit equity goals. Indeed, they seldom mention race, income, or other characteristics that might influence the distribution of risks and benefits, or the effectiveness of risk communication. The risk communication efforts have not been aimed at addressing disproportionate distributions in risk, nor are there explicit guidelines to ensure that the risk communication process itself is as effective as it could be at reaching all affected populations.

While risk communication guidance contains valuable advice, much of it is general; it does not explicitly address the issue of equity. One can extract ideas for more equitable risk communication from the guidance, but both the Agency and affected communities would benefit from risk communication guidance that explicitly addresses equity issues.

Unfortunately, the real practice of risk communication is seldom able to live up to the aspirations of those who craft written guidelines. Even in those instances where members of the community have been actively engaged in the decision-making process, these tend to be the members of society more likely to participate even without encouragement from EPA. Racial minority and low-income groups often feel excluded. While EPA believes that risk communication is a two-way process, many of the activities tend to be unidirectional, aimed at "educating" the public. Providing information in this manner without assuring forums for substantial input into the decision-making process can lead to frustration and anger on the part of the public.

7.0 OUTREACH EFFORTS

Administrator Reilly's fourth and final charge to the workgroup was to review institutional relationships, including outreach to and consultation with racial minority and low-income organizations, to assure that EPA is fulfilling its mission with respect to these populations.

7.1 NATIONAL ENVIRONMENTAL EQUITY NETWORK

Local grassroots organizations play a key role in the environmental equity movement. These groups often are comprised of individuals who historically may not have been part of a large membership environmental organization. In many cases, individuals in these groups live in racial minority or low-income communities and have mobilized around a threat to their immediate community, such as a landfill or incinerator. It is of critical importance that the Agency make a special effort to contact these groups both through EPA headquarters initiatives and, more importantly, the Regional Offices. Traditional community organizations such as religious organizations also offer a unique opportunity to reach individuals whose lives are directly affected by environmental equity issues. An excellent example is the United Church of Christ (author of *Toxic Waste and Race*, 1987). The United Methodists, National Council of Churches, and the Presbyterian Church have all been actively involved in the environmental equity movement. Clearly, part of EPA's responsibility to achieve effective outreach is to identify community organizations with the credibility and means to reach individuals who otherwise may not be reached.

Effective use of the media is an essential component in reaching population groups with a direct stake in environmental equity issues. The Subgroup compiled information on a range of racial minority and ethnic newspapers and newsletters published nationally as well as locally. These publications provide a valuable conduit for disseminating information. EPA is also exploring increased use of radio public service announcements in languages other than English.

The headquarters outreach committee has begun to contact hundreds of organizations and individuals nationwide to build a national environmental equity network. The outreach effort includes organizations such as universities, minority rights membership organizations, community-based grass-roots groups, religious organizations and local extension services. Groups and individuals are also included from the Agency's traditional constituencies such as environmental groups, civic and consumer groups, labor organizations, business and trade groups, congressional representatives, and state and local organizations. This network will become a cornerstone for hearing concerns, sharing information, and exchanging success stories. The list will be made available to the Risk Communication Program, Regional offices, and program offices for use in risk communication and outreach on specific rules and Agency initiatives.

7.2 COOPERATION WITH OTHER FEDERAL AGENCIES

Although EPA has several on-going efforts with the U.S. Department of Agriculture (USDA), the U.S. Department of Health and Human Services, the Appalachian Regional Commission, and the U.S. Census Bureau, there is significant room for increased cooperation. Work with Health and Human Services has focused on developing a proposed Memorandum of Understanding between EPA and the Agency for Toxic Substances and Disease Registry (ATSDR). The memorandum contains a section under which the agencies agree to exchange information related to health and risk assessments. Also, ATSDR has a minority health initiative that should be coordinated with EPA's environmental equity initiatives.

EPA's work with USDA has centered on establishing links with the Cooperative Extension Service—a Federal/State partnership where agents disseminate information to local communities. A pilot project is being developed by the Extension Service in which a training manual is being written to incorporate environmental concerns—including environmental equity issues. If successful, the project will be used as a model for training manuals used by other local extension services in other parts of the country. EPA is supporting the project by providing information on environmental equity concerns. The Agency also is discussing strategies for tapping into the existing network of hundreds of local extension services nationwide to spread the word about its environmental equity work and gain valuable feedback.

The Appalachian Regional Commission (ARC) is a Federal-State agency concerned with economic, physical, and social development in Appalachia. EPA's work with ARC has focused on developing a Memorandum-of-Understanding (MOU) between ARC and EPA's Public-Private-Partnerships (P3) Program. The MOU seeks to promote public-private partnerships and other financing alternatives in solving environmental problems facing small, economically disadvantaged communities in this region.

8.0 EQUITY EFFORTS AND PERSPECTIVES AT THE REGIONAL LEVEL

Many environmental equity issues will best be addressed by regional offices because environmental problems and local populations differ widely across the United States. Regional staff, closer to the problems and the communities at risk, will be better suited to identify and solve equity issues. The role of the headquarters office should be to identify broad national environmental equity issues, develop policies with strong regional representation and provide technical assistance to the regional offices.

A Regional Perspectives Subgroup was formed to detail perspectives from regional staff on equity issues and to collect information on regional environmental equity activities. Regional staff were surveyed by telephone. They were asked to comment on where inequities might exist. Regional contacts were also asked about projects underway that targeted equity issues or strongly impacted specific population groups.

8.1 REGIONAL STAFF PERSPECTIVES

Through many discussions with regional staff, the most important discovery to emerge was that many were unaware of equity issues. When pressed staff members could cite anecdotal evidence that environmental risks impact certain communities disproportionately. However, many believe that the Agency's activities are generally equitable, because its mission statement is focused on the environment, not on particular groups. This perception—founded on the assumption that national standards and a focus on resources protect all communities equally—is, in part, what has allowed instances of disproportionate distribution of pollutants to continue unaddressed.

Awareness of equity issues varied considerably by region. Most frequently, staff members cited the following as areas of concern: The existence of large numbers of hazardous waste sites in low-income communities, EPA's lack of control over the siting process, and disproportionate distribution of National Priorities List sites. Regional staff also consistently pointed to issues surrounding siting of publicly owned treatment works (POTWs) and construction grants under the Clean Water Act. It should be noted, however, that the siting of POTWs is a local decision and not within EPA's jurisdiction.

Most of the Regional staff members interviewed identified outreach as a key method for addressing environmental equity issues. There are examples of EPA targeting information to specific, high risk populations. Among the examples of this are Region IX's translation of worker protection standards into Hmong; the translation of Superfund Factsheets into Portuguese for use in New Bedford, MA (Region I); and Region II's production of the spanish publication "Mercurio y el Ambiente" ("Mercury and the Environment").

Outreach on environmental equity issues can be conducted in two ways. It can be unidirectional, with the Agency communicating its message to the communities of concern, or bidirectional, with the Agency engaging in a dialogue with these communities, both communicating its message and listening to the communities' concerns. Regional staff members support a bi-directional approach, believing that

the Agency needs to exhibit a willingness to address community concerns as well as the Agency's own agenda. Examples of a bi-directional approach are Region IX's underwriting of Spanish-language radio call-in programs in the Fresno, California area that deal with issues of pesticide use and worker safety, and Region VIII's model risk communication program.

Given the general lack of awareness demonstrated by many regional staff, the importance of the individuals addressing equity concerns increases. Regional staff familiar with environmental equity issues demonstrated the ability to address the issue through existing programs. In many cases, equity issues can be addressed without major shifts in staff responsibilities or programmatic changes. However, awareness of equity issues by individual regional staff is not sufficient. Equity considerations must be incorporated systematically into all aspects of the Agency's field work.

Despite the general lack of awareness, there are on-going regional activities that address environmental equity issues. Many of these activities began before the Workgroup was formed. Through the efforts of a relatively small number of staff, several regional offices have managed to conduct research, outreach, and risk communication efforts targeted to racial minority and low-income communities. However, the efforts are not comprehensive, and should be viewed as demonstrations of what regions can do to address equity issues.

8.2 REGIONAL EQUITY PROJECTS

EPA's regional offices are leading the way in on-the-ground, practical programs to reduce perceived and actual environmental inequities. Regional offices are engaged in a variety of environmental equity projects including risk assessment, risk communication, and programmatic efforts targeted to reduce disproportionate risk. The following list of projects includes regional and Headquarters programs that address risks in racial minority and low-income communities. This list expands upon and adds new information to that information included in the Summary Report.

Project Name: Urban Environmental Initiative
Region: I (Boston)
Contact: James Younger
Phone #: 617-565-3427

Project Summary:

The Urban Environmental Initiative is an attempt to develop a bi-directional communication strategy. The ultimate goal of the Initiative is to develop a listing of environmental issues to be addressed—an environmental agenda—for the Boston area which includes the concerns of racial minority communities.

Currently underway in Boston, the project focuses on community awareness, empowerment and involvement in environmental issues. The program is exploring the impact of environmental problems on the urban community with particular emphasis on environmental problems other than lead, such as air pollution, PCBs and radon.

Region 1 is employing a broad-based meeting approach. Groups of community leaders, black college student government presidents, local urban media outlets and EPA officials have been convened. Nine meetings will be held over the course of

two years and will culminate in a major conference in the spring of 1993. This outreach will not only address critical issues, but also convey to the community a description of the Agency's mission statement, mandate, and authorities.

Project Name: Strategic Planning Initiative
Region: I (Boston)
Contact: James Younger
Phone #: 617-565-3427

Project Summary:

In 1990, Region I refined its strategic planning process to serve as a tool for managing human health and ecological risks. The region articulated four strategies in this ongoing process: Changing organizational culture, pollution prevention, resource protection, and relationships with government agencies. Recognizing the importance of environmental equity, the region incorporated the issue under changing organizational culture. A component of the region's articulated vision emphasizes this commitment: "A New England where rich and poor alike share in the benefits of a healthy environment."

Key to the strategic planning process is the undertaking of strategic analysis to assess the Region's internal strengths and weaknesses. The region determined that it is not addressing the problem of environmental equity, since low income groups may be facing higher risks and disproportionate costs for environmental protection. The present organizational culture does not support the skills and approaches necessary to advance environmental equity. The region also identified as a critical issue the need to focus its outreach efforts to address environmental equity. Part of the region's integrated action plan provides for equity awareness training.

Project Name: Superfund Enforcement Investigation
Region: II (New York)
Contact: Dana Williams
Phone #: 212-264-1709

Project Summary:

In 1990, Region 2's Equal Employment Office (EEO) proposed examining the hypothesis that more affluent communities were receiving more favorable cleanup through the Superfund program. The study will document if there are more Superfund/CERCLIS sites located in racial minority and/or poor communities. Using census data recently loaded into a Graphics Information System (GIS), a map will be developed that includes the location of CERCLIS and Superfund sites and pertinent demographic data. Demographic data will include per capita income and percentage of population in racial minority groups.

In addition to this site location/demographic analysis, the study will examine cumulative individual risk at sites, using standard risk assessment methodology to quantify the risk to public health in reasonably foreseeable exposure scenarios.

Are more affluent communities able to speed up the Superfund process? This study will identify the key factors in determining the speed of activity of remediation at Superfund sites. Do racial minority and poor communities receive proper attention in the earlier stages of the Superfund process? To measure the efficiency of the Superfund process, time frames in the earlier stages of the process

will be investigated. An evaluation of the amount of time spent performing these tasks may reflect environmental inequities stemming from higher prioritization given to more politically charged sites.

Are more sites making the National Priority List (NPL) in affluent communities than in poorer communities? CERCLIS sites with severe enough environmental conditions are placed on the NPL and are therefore eligible for a federally funded cleanup. This study will evaluate the type and degree of political pressure exercised by communities in influencing whether sites are placed on the NPL.

The following elements of the Superfund process will be investigated:

- Do biases exist within the Hazard Ranking System that would favor affluent communities and allow them to receive higher scores and be placed on the NPL?
- Is public involvement more visible in more affluent communities?

The methodology will be dependent upon the data available. The first level of analysis involves anecdotal evidence found through interviews with the Superfund staff in Region 2. The second level will involve quantitative measures, focusing on the statistical significance of the data. If the data are available and adequate, a third level of study will be performed involving multiple regression analysis. Correlations will be developed between demographics and the various elements of the Superfund process.

Project Name: Baltimore/Washington, D.C. Urban Environmental Risk Initiative
Region: III (Philadelphia)
Contact: Dominique Luckenhoff
Phone #: 215-597-6529

Project Summary:

Multi-media environmental risk profiles for socioeconomic subgroups within the study area will be developed and displayed on Geographic Information System (GIS) maps. GIS will serve not only to assist with the analytical work, but also to present the results in a format understandable to the general public. These risk profiles will also be compared to background or reference conditions in order to determine whether environmental risks within the defined study areas are disproportionately distributed by socioeconomic class. Community outreach to organizations and individuals representing the affected populations in the study areas will be conducted with the assistance of state and local officials and Morgan State University. In addition to communicating EPA's risk assessment findings, these community outreach forums will also be used to reach consensus on the environmental problems of greatest concern and how best to address them based upon community needs and available resources.

Project Name: Radon and Asbestos Awareness Program (RAAP)
Region: III (Philadelphia)
Contact: Aquanetta Dickens
Phone #: 215-597-4553

Project Summary:

The Radon and Asbestos Awareness Program (RAAP) targets racial minority communities for effective communication of health risks associated with radon and asbestos. The program is now being piloted in the Philadelphia area, with the intention of being transferred to other major metropolitan areas within the region. The program involves regular radio forums consisting of professionals from EPA, other federal agencies, universities/colleges and private industry to communicate the health threats of radon and asbestos and to obtain direct feedback from members of ethnic communities on their experiences and perceptions of the problems.

Project Name: Multi-Cultural Participation in the Chesapeake Bay Program
Region: III (Philadelphia)
Contact: Dominique Lueckenhoff
Phone #: 215-597-6529

Project Summary:

The Chesapeake Bay Program is developing a multi-cultural participation program to broaden public participation and involvement in the restoration of the Bay. The target groups for greater involvement are citizens of African, Latino and Asian descent, as well as rural poor and others with a direct economic link to the productivity of the Bay.

The focus of the program is on structuring public information materials and educational programs to have broad appeal and encourage increased participation. This includes surveying multi-cultural interests to evaluate the impact of the Chesapeake Bay Program on racial minority and low-income communities. For example, the Anacostia Public Education and Participation Program of the Interstate Commission has reached over 40,000 people since 1988. The program has a quarterly newsletter, 9 sub-basin coordinators and educational activities and outreach. A prime goal of this program is to get every foot of every stream within the Anacostia watershed "adopted" by local residents and businesses.

Project Name: Lead Education and Abatement Program (Project LEAP)
Region: V (Chicago)
Contact: William H. Sanders III, Project Director
Phone #: 312-353-3808

Project Summary:

INTRODUCTION

The Region 5 comparative risk study was completed in the summer of 1990. The study identified lead as one of the multi-program pollutants of concern. The region thus selected lead as a priority area, and tasked the medium programs, and a project director, with development of a comprehensive strategy/implementation plan to address and remediate lead contamination in the six state region.

The group recognized that lead poisoning in children is now considered to be a national epidemic. Lead exposures from exterior and interior residential paint, as well as exposures from contaminated soils and dust in and around structures

present in most urban areas, drinking water, air emissions, food, occupational settings, and hobby activities, result in multiple pathways of exposure. These exposures are responsible for a number of adverse health effects in humans, especially in children. Because children are at elevated risk, a targeted population has been chosen to be children under seven years of age, and women of child bearing age as a surrogate for the fetus. Within this population group, African and Latino-Americans are particularly targeted in recognition of an increased body burden susceptibility/vulnerability to the uptake and effects of lead exposure. Within the region, 68 Metropolitan Statistical Areas (MSAs)—essentially all the inner-city locations—are being studied.

Project LEAP is a multi-media and multi-program approach having four basic components: (1) data analysis and targeting; (2) pollution prevention; (3) education and intervention activities; and (4) abatement activities. The project will be implemented over a three year period, and is a component of the Agency Lead Strategy. The project focuses upon data analysis, air modeling of major sources, prioritization of sources and areas for targeting purposes, and selection of geographic areas for attention during the second and third years of the Project. The data analysis stage will be completed in the Spring of 1992.

PROJECT STATUS

AIRS-FS data (stationary source air emissions) have been obtained and organized in a database for all Region 5 states except for Ohio (data is pending from the state agency). Toxic Release Inventory (TRI) data are also being used in this project. Between the two data bases, all reported significant sources of stationary source exposure via the air pathway should be ascertained. Emission information for the 30 Municipal Waste Combusters located within the region, along with other facility information, is also being incorporated. Significant sources within the 68 MSAs will be selected for air concentration and deposition modeling.

The national database for drinking water contains a very limited number of public water supplies reporting exceedances of the then-existing 50 ppb drinking water standard for lead (i.e., there have been a relatively small number of exceedances). Information is being provided by each of the six states on actual measured values, as reported, for public water supplies serving residents in the 68 MSAs.

Although all Superfund sites in the region have been mapped in geographic information systems (GIS) format, information has not been evaluated for lead. Consequently, that information will have to be gleaned from individual hard copy reports of the preliminary assessment/site investigations for each site in the areas of interest. A similar approach will be started for RCRA facilities. LEAP's first report, *Spatial and Numerical Dimensions of Young Minority Children Exposed to Low-Level Environmental Sources of Lead*, is complete and available upon request.

Project Name: Geographic Enforcement Initiative
Region: V (Chicago)
Contact: Bert Frey
Phone #: 312-886-6823/6771

Project Summary:

The Region 5 Geographic Enforcement Initiative (GEI) is a major part of an ongoing, risk-based, multi-media effort focused on Southeast Chicago and Northwestern Indiana. This heavily industrialized area is beset with a host of environmental problems affecting air, water, soil and quality of life. The residents of this area include a high percentage of low-income and minority people. Previous evaluations of this area have highlighted a variety of unacceptable human health and ecological risks.

The goals of the GEI are:

- Reduce toxic loadings in the area by 50% by 1990.
- Restore Ecological Systems within the area.
- Achieve a high level of compliance with all Federal and State environmental laws and regulations.
- Achieve full compliance with Annex 2 of the Great Lakes Quality Agreement.
- Develop and implement a pollution prevention program to complement Federal and State Enforcement.
- Integrate an aggressive communications strategy into each aspect and phase of the initiative.

Project Name: GIS/Comparative Risk Equity Analysis
Region: VI (Dallas)
Contact: Lynda Carroll
Phone #: (214) 655-6570

Project Summary:

Region 6 has developed Geographic Information System (GIS) and Comparative Risk capabilities to evaluate environmental equity concerns in the five states in the area. Region 6's comparative risk methodology identifies susceptibility factors as part of risk evaluations for human health. Factors such as age, pregnancy, genetics (race), personal income, pre-existing disease and lifestyle are susceptibility measures. Considerations of racial minority status are included in the genetics and lifestyle factors. The other factors indirectly assess the socioeconomic status of identified population groups.

Susceptibility factors have been analyzed for site specific studies (i.e., areas around hazardous waste sites) and large geographic locations such as cities, states or the region. Combined with chemical release data (i.e., the Toxic Release Inventory or monitoring information), geographic and demographic data and state health department vital statistics data, regional equity assessments can be performed routinely.

Project Name: Gulf Coast Toxics Initiative

Region: VI (Dallas)

Contact: Lynda Carroll

Phone #: (214) 655-6570

Project Summary:

The Gulf Coast Toxics Initiative is a major 1992 enforcement effort in Region 6. The program will target facilities in the sensitive Gulf Coast ecoregion where most of the toxic releases in the region occur. The region's inspectors will allocate 38 percent of their time to this initiative. Owing to the high human populations and quantity of wetlands in the Gulf Coast of Louisiana and Texas, it was selected as the most likely area to benefit from an intensive multi-media enforcement effort.

Project Name: Rio Grande Study

Region: VI (Dallas)

Contact: Lynda Carroll

Phone #: (214) 655-6570

Project Summary:

The Agency is committing \$352,000 over the next two years for a study that will monitor and analyze the presence of toxic chemicals along the Rio Grande from El Paso to the Gulf of Mexico. The study is designed to determine whether environmental pollution is causing the high incidence of birth defects in the lower Rio Grande Valley and whether the health of residents along the U.S.-Mexico border is at risk. Water and sediment samples will be taken in the Rio Grande above and below all major urban areas and industrial sites outside of urban areas. The EPA will also sample each tributary as it enters the Rio Grande, as well as sampling wastewater treatment discharges and untreated sewage at their points of discharge. Furthermore, the study will include laboratory analysis of fish samples taken from various points along the river.

Project Name: Region VII Indian Strategy

Region: VII (Kansas City)

Contact: Dewane Knott

Phone #: 913-551-7000

Project Summary:

The focus of EPA's Indian Strategy is to develop the capability within tribes to manage their own tribal environments. Since tribal environments and the corresponding environmental problems vary nationally, Region VII is implementing the strategy by concentrating in the three areas identified as priorities by the tribes in the region: solid waste, environmental education and groundwater protection. A Native American Senior Employment Program person has been hired to work exclusively with the tribes on solid waste issues by providing training opportunities. In terms of environmental education, Region VII is distributing an environmental curriculum to the reservation schools accompanied by teacher training, distributing training videos to the tribes, and coordinating with the local Native American junior colleges. Groundwater contamination is being addressed

with additional outreach and by including a groundwater component in all grants awarded to tribes.

Project Name: Environmental Education Initiative
Region: VII (Kansas City)
Contact: Rowena Michaels
Phone #: 913-551-7000

Project Summary:

Region VII and the University of Kansas established a National Environmental Education and Training Center to provide leadership in environmental education, teacher training and professional development. The region funded a pilot teacher training project to develop exemplary environmental education modules for use in the four state area. The project focused on educating K-6 teachers at a two-week, on-campus "Summer Institute" in July, 1991. Special emphasis was placed on assuring that teachers selected for the "Summer Institute" represented diverse school districts from urban and rural areas in Region VII. The Center will continue to assure that diversity is a special focus in future educational efforts.

The Region VII Strategic Plan covering fiscal years 1993 through 1996 includes commitments to work extensively with educators throughout the region to assure that young people receive adequate information about environmental matters to make sound environmental choices throughout their lives. The Plan also recognizes environmental equity as an important issue which will be reflected in communication and outreach.

Project Name: Equitable Enforcement Investigation
Region: VIII (Denver)
Contact: Elmer Chenault
Phone #: 303-293-1622

Project Summary:

Region 8 has initiated an investigation of polluting facilities and enforcement actions in the Denver-Boulder metropolitan area using Geographic Information System (GIS) technology. The concern is that one or more localities may experience a significant degree of inequity with regard to the level of enforcement.

1980 demographic data has been assembled for the Denver-Boulder Metro area. Census tract areas range from populations of 30 to 8,000 (average 4,000). Income data was projected onto the areas for both poverty and poverty threshold areas. Poverty areas are made of tracts where greater than 25% of the persons live below the poverty level. Poverty thresholds areas are defined as areas where greater than 12% of the population lives below the poverty level. Ethnic composition has also been included in the GIS.

Environmental hazard data derived from the CERCLIS inventory and the Toxic Release Inventory (TRI) was then projected on to the area maps. Of the universe of 315 sites, approximately 120 appear to present a potential health hazard. These include 98 CERCLIS and 22 TRI sites.

Future project activities will entail collecting enforcement data and adding it to the data base. Once this is completed, a review of the level of enforcement with regard to ethnicity and income level can then be delineated. If inequities do exist,

recommendations will be made to ensure equitable distribution of enforcement activities.

Project Name: Outreach Program in Ethnic Communities
Region: VIII (Denver)
Contact: Elmer Chenault
Phone #: 303-293-1622

Project Summary:

Region 8 is currently developing and testing a model outreach program designed to communicate environmental awareness to ethnic communities. The program heavily emphasizes two-way communication and is being piloted in a low-income neighborhood in Denver. Based on initial meetings with the community, the multi-media approach is being designed to communicate, in simple common language:

- **Risk Assessments:** How are they done, what they mean, how they are used, etc. (For example: What is a risk factor? How is it determined? What risks are acceptable, why/why not?)
- **Legal Rights:** What peoples rights are and how they can be pursued.
- **SARA Title III (Community-Right-To-Know):** What is it? How does it work? What is it for? Who can access what information? How?
- **Technical Assistance Grants (Superfund):** How can communities access technical assistance grants or other types of grants? Technical Assistance Grants can be used to do studies, hire technical experts, perform outreach into communities, etc.
- **Federal vs. State Responsibilities:** Explains who has responsibility for oversight, enforcement, and law suits relating to polluting industries.
- **Hazardous and/or Toxic Materials:** Why are materials defined as hazardous and/or toxic?

Once the program has been implemented and modified in Region VIII, an information packet will be distributed for national application. The kit will include:

- An EPA outreach model for low-income communities;
- Actions Plans for Workshops;
- Detailed Workshop Presentations; and
- Detailed schedule to implement community workshops.

Project Name: California Migrant Labor Drinking Water, Enforcement Program
Region: IX (San Francisco)
Contact: Mona Ellison
Phone #: 415-744-1846

Project Summary:

METHODOLOGY

For years, small water system compliance with the National Primary Drinking Water Regulations has been a focus of EPA Region 9's public water supply enforcement efforts. During the past year, Region 9 has worked to gather information on a subset of these systems -- migrant labor camps in California. Since migrant farm workers are known to be vulnerable to many environmental hazards, the Region 9 Drinking Water Branch was concerned that labor camps shared many, if not more, of the compliance problems common to small systems throughout the state.

A listing of over one thousand labor camps was obtained from the California Department of Housing and Community Development. This listing revealed over 300 camps, located throughout 41 of California's 58 counties, which might have water systems meeting the Safe Drinking Water Act definition of a public water system.

In addition to the county environmental health agencies, several migrant worker and rural community assistance agencies were contacted to discover any camps unknown to both state and county agencies. Contact was made with the Rural Community Assistance Corporation (RCAC), California Rural Legal Assistance Foundation, California Institute for Rural Studies, and the Agricultural Workers Health Center in Stockton.

FINDINGS

The survey revealed that labor camp water systems may have a higher noncompliance rate than other categories of smaller systems. Most camps were not inventoried or being monitored as public water systems by county environmental health agencies, although they met the definition of public water systems. In summary, we found 191 violating labor camp water systems (some camps have more than one violation) serving over 8,500 people in 20 counties. Failure to monitor (sample) and report is the most common violation category. Not all labor camps house "migratory" people; many camps serve water to workers and their families in single family dwellings on a year-round, permanent basis. Some house and serve water to people for at least six months or longer.

FOLLOW-UP

More than one county contact warned that strict enforcement of the drinking water regulations may result in the closure of many labor camps, creating additional housing, welfare and social burdens for county administrators, taxpayers and camp residents. According to these country contacts, labor camp owners have often chosen to close their camps rather than comply with regulations.

Counties were contacted to discuss the enforcement options available for bringing violating camps into compliance. Options included the county assuming full enforcement responsibility, EPA issuing the initial enforcement action (a Notice of Violation) with county follow-up enforcement, if necessary, or EPA assuming full enforcement responsibility.

In June 1991, a final report of Region 9's findings, including an appendix listing the violating camps and related pertinent information was sent to the California

Department of Health Services (DHS), the California Department of Housing and Community Development (HCD), and all county environmental health agencies involved in the survey. EPA Region 9 hopes to work in a close, collaborative effort with both DHS and the county environmental health agencies, as well as HCD, to bring as many violating labor camp water systems into compliance as possible.

As part of this effort, Region 9 staff plan to accompany county housing and/or public water system inspectors on routine inspections of some labor camps.

Project Name: Hawaii Environmental Risk Ranking Project

Region: IX (San Francisco)

Contact: Gerald Hiatt

Phone #: 415-744-1022

Project Summary:

The state of Hawaii has undertaken a comparative risk project to identify and rank environmental problems facing the state. Risk assessment information is being used to rate Hawaii's environmental problems on the basis of threats to: human health, environment, economic welfare and quality of life. One of the major quality of life concerns is the effect of development and pollution on native Hawaiians, including a number of subsistence-level communities. Native Hawaiian culture and religion are closely tied to the environment and the sociological and psychological impacts of environmental change extend beyond direct health and ecosystem effects.

Two issues unique to native Hawaiians are being considered: 1) cultural and religious impacts of loss or degradation of specific ecosystems or sites; and 2) increased exposure to environmental pollution in subsistence-level Hawaiian communities. Three professors at the University of Hawaii are assisting the project: Drs. Luciano Minerbi, Davianna McGregor, and Jon Matsuoka.

Project Name: Pesticide Applicator Training

Region: X (Seattle)

Contact: Allan Welch

Phone #: 206-553-1980

Project Summary:

Region 10 has developed, in conjunction with the Washington Department of Agriculture, a Pesticide Applicator Training course in Spanish. This training module was developed for Hispanic farmworkers who find it easier to learn in Spanish. During 1991, a total of 400 Hispanic farmworkers attended one of the six session courses that were held at six different locations in Washington state. Many of the participants took and passed the Washington private applicator exam. A copy of the training program will be made available through the Washington Department of Agriculture.

Project Name: A Methodology for Estimating Population Exposure from the Consumption of Chemically Contaminated Fish
Region: Headquarters/Region X (Seattle)
Contact: Craig McCormack
Phone #: 202-260-5873

Project Summary:

The purpose of the study is to develop a methodology to estimate populations that may be at a greater than average risk from eating fish contaminated from industrial point pollution. These populations eat fish at a greater than average rate and include Native Americans, Asians, Blacks, and recreational and subsistence fishers. The methodology developed provides an estimate of a geographical area of potential exposure and an estimate of exposure and risk in consideration of age, sex and race/ethnicity. The methodology will assist EPA regional offices and states in issuing fish advisories.

To collect more data on the fish consumption patterns of Native Americans, EPA is sponsoring the Columbia River Inter-Tribal Fish Commission Survey of Fish Consumption and Related Issues. In this survey, four Pacific Northwest Indian tribes are being surveyed about their fish consumption habits.

Project Name: Effectiveness of the SRF Program: Economically Disadvantaged Communities
Headquarters: Office of Policy Analysis
Contact: Bob Greene
Phone #: 202-260-7069

Project Summary:

This study is testing whether the State Revolving Fund (SRF) Loan Program is providing equitable funding to economically disadvantaged small communities and the proportion of water quality problems contributed by these communities. (SRF is the funding mechanism under the Clean Water Act for publicly owned treatment works). Data on communities receiving SRF loans and construction grants, amount of loan/grant, purpose of the award, community size, and financial condition of the community is being put on a data base. Data will be collected relating to the effects of small, economically disadvantaged communities on water quality. The study will also review alternative methods of creative financing for economically disadvantaged communities. Project completion is being set for spring of 1992, and will be relevant to the Clean Water Act reauthorization proceedings in Congress.

Project Name: Public-Private Partnerships (P3) Program
Headquarters: Office of Administration and Resources Management (OARM)
Contact: David Osterman
Phone #: 202-260-1020

Project Summary:

The P3 program works to leverage public and private resources for environmental protection financing in small and/or economically disadvantaged communities. P3 is implementing demonstration projects in each of the EPA regions to serve as

models of practical solutions to local environmental financing problems. The projects, designed to be replicated in communities across the nation, develop and test new financing arrangements and encourage private participation in environmental services. To date, twenty projects have been funded.

P3 also has a joint demonstration program with the Appalachian Regional Commission, a Federal-State agency concerned with economic, physical, and social development in Appalachia. The program promotes partnerships and other financing alternatives to solve environmental problems facing the small and economically disadvantaged communities of the Appalachian region.

The P3 program is evaluating the feasibility of establishing a development fund that will serve as a permanent source of money for supporting innovative demonstration projects. This fund would be a non-profit authority that makes grants and low-interest loans to finance the development of public-private partnerships. The initial feasibility study is being conducted in Puerto Rico.

Project Name: EPA Lead Reduction Strategy
Headquarters: Office of Pollution Prevention and Toxics
Contact: Joe Carra
Phone #: 202-260-1815

Project Summary:

EPA's comprehensive lead strategy, released last February, has a goal of reducing lead exposures to the fullest extent practicable, with particular interest in reducing the risk to children. One of the objectives EPA will use to set program priorities and gauge program success is the significant reduction in the number of children with blood lead levels greater than 10 µg/dl. EPA is currently evaluating the feasibility of regulating the commercial use of lead solder for drinking water plumbing, and a lead leaching standard for plumbing fittings. Last June, EPA published a final rule reducing the amount of lead in drinking water. It ensures that homes with the highest risks are targeted for treatment. As a result, approximately 600,000 children will have their blood lead levels reduced below 10 µg/dl. In addition, by next spring, EPA will propose lowering the National Ambient Air Quality Standard for lead.

Project Name: Mexico-U.S. Integrated Border Environmental Plan
Region: Headquarters, VI (Dallas), and IX (San Francisco)
Contact: Richard Kiy
Phone #: 202-260-0791

Project Summary:

In response to a request by the Presidents of the Mexico and the U.S. in November, 1990, EPA and its Mexican counterpart have developed a bilateral plan to protect the environment in the border area. Of particular concern are the inadequate waste water treatment and drinking water facilities for the colonias (unincorporated towns along the border.) The plan was released in mid-winter of 1992. The U.S. National Enforcement Training Institute held training sessions for Mexican inspectors of maquiladora industries on March 23-27, 1992.

EPA, joining forces with the State of Texas and the U.S. Department of Agriculture (USDA), has launched a major initiative to address the severe water

pollution and water supply problems faced by the colonias on the United States side of the U.S.-Mexico border.

U.S. colonias are small, unincorporated, rural border communities which often suffer from substandard housing, inadequate roads and drainage, and limited or no water or sewer treatment facilities. Lack of these basic sanitation facilities poses serious public health risks, among them hepatitis and cholera, for the more than 200,000 residents of these predominantly Latino communities.

Colonias were largely bypassed by the national water cleanup programs of the last 20 years. Since 1972, EPA's multibillion dollar Construction Grants program has been the major source of funds for municipal wastewater systems in the U.S. By statute, grants could only be awarded to state or local governments. Most U.S. colonias are in unincorporated areas and their environmental problems have been largely unaddressed as a result.

Federal and state multimillion dollar efforts will result in measurable improvements in colonia environments. EPA has requested \$50 million for 1993 for the construction of wastewater systems in these disadvantaged communities in Texas. The State of Texas is already administering an EPA-funded \$15 million special State Revolving Fund to provide indoor plumbing in colonias.

EPA will also work in tandem with USDA's Rural Development Administration to tackle the water problems of colonias. USDA requested \$25 million for 1993 specifically for drinking water systems in colonias. The State of Texas is also contributing sizable funding for water pollution control in Texas colonias.

Project Name: Environmental Health Equity Analysis: Evaluation of Potential Human Exposure to Pollution Using the Toxics Release Inventory
Headquarters: Office of Health Research
Contact: Ken Sexton
Phone #: 202-260-5900

Project Summary:

The Office of Health Research (OHR) has initiated a project to evaluate the relationship between levels of pollutant emissions and the extent of exposure to racial minorities and/or people of lower socioeconomic status. The first step involves an analysis of the location and magnitude of emissions (as identified by the Toxics Release Inventory) and the demographic characteristics of the population in the surrounding area. Demographic data will come from the U.S. Bureau of the Census or the Donnelley Marketing data base. Additional data sets, such as the attainment of the National Ambient Air Quality Standards, will be added as the project develops. The analysis will be done by state, county and targeted geographic areas. This is a long-term effort that began in February 1992.

The Office of Health Research (ORD) and the Office of Air Quality Planning and Standards are developing a demographic study of toxic air emissions. A massive GIS will be used to plot TRI air releases and Census Bureau demographic data. This is a long-term, large scale study that will begin in 1992.

9.0 INSTITUTIONAL MODEL FOR ADDRESSING ENVIRONMENTAL EQUITY ISSUES

The Equity Analysis Subgroup reviewed definitions of environmental equity and explored how to incorporate equity into Agency operations. As part of their efforts, the Subgroup developed the following comprehensive model for addressing environmental equity issues at EPA.

9.1 BACKGROUND AND RATIONALE

EPA should develop institutions and mechanisms to address environmental equity issues as they arise. The institution should be accessible to affected communities and capable of grappling with many different forms of equity (racial, socio-economic, age, etc.) where equity issues are being addressed by others, such as Congress, the states and other Agencies, EPA should attempt to appropriately coordinate its efforts with these other institutions.

9.2 MISSION OF AN INSTITUTIONAL RESPONSE

To insure that equity plays a role in shaping national environmental policy, the equity program at EPA should have a broad mission.

9.2.1 Goals

- Display the Agency's good faith and due process in decision making.
- Provide a procedural mechanism within the Agency to aid officials making difficult equity decisions.

9.2.2 Functions

Education/Communication

- Stimulate the Agency to consider equity issues in the course of its decision-making.
- Educate the Agency and facilitate communication about equity issues as they arise, both internally and with other organizations. Support a similar educational process at regional and state levels.

Policy Recommendations and Guidelines

- Develop and issue policy guidance. Develop a process for the consideration of equity issues. Identify equity issues where programs or offices fail to do so.

Consultation

- Consult with appropriate program offices to clarify equity issues inherent in policies and decision processes. Determine whether all relevant information has been collected. Help to resolve conflicts if they arise.

Review

- Review the equity implications of previous decisions and policies. Perform "audits" of the institution and its programs at regular intervals.

9.3 IMPLEMENTATION PLAN

The Agency should pursue a phased approach toward formally institutionalizing an equity function into its structure and operations. This approach is outlined below and illustrated in the following diagram.

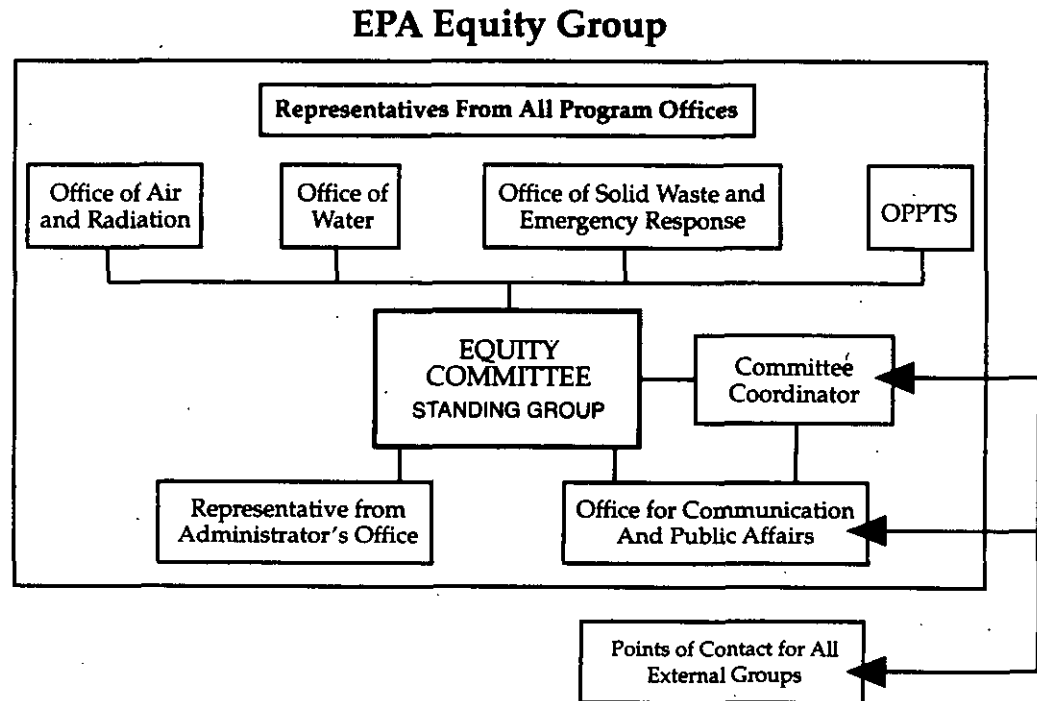
9.3.1 Phase One: Short Term

1. Creation of an Internal Standing Equity Group

EPA should establish an internal standing group to address equity concerns, and should provide this group with adequate staff and financial resources to support its functions. This group would normally meet quarterly but could be convened as needed. The proposed equity group is shown in Figure 2 and includes the following:

An Equity Committee which builds on the role of the current Environmental Equity Workgroup. The Committee would be supported by a Coordinator (1.0 FTE minimum) who would provide an institutional focus for equity issues and act as a conduit to outside groups.

Figure 2:
Equity: Institutional Model (Internal)



Representatives from all EPA Program Offices. This function could be filled by Special Assistants in each Assistant Administrator's Office. These representatives would be responsible for monitoring potential equity issues in their respective offices and keeping AA's informed of program-relevant equity concerns of external groups.

A Representative from the Administrator's Office (Special Assistant) who would keep the Administrator informed of the Equity Group, its work, and emerging issues.

A contact within the Office of Communications and Public Affairs to facilitate public education and outreach activities.

The Equity Group would initially focus on the functions of education, communication, and issue identification, and would:

- Maintain steady communications with outside groups; serve as a clearinghouse for their concerns.
- Provide outreach to advocates for low-income groups and maintain communications with "invisible minority" advocacy groups, e.g. organizations focusing on hunger, homelessness, occupational safety.
- Identify environmental equity issues in Agency activities, such as proposed rulemakings, issuance of guidelines, and grant allocation.
- Provide technical assistance to program offices in carrying out Environmental Equity Workgroup recommendations and addressing equity issues.
- Coordinate activities and policies with equity implications with other Federal Agencies such as Health and Human Services.
- Educate the Agency about equity through holding internal symposia and workshops.
- Sponsor a yearly conference which focuses on equity or equity-related issues.

2. External Advisory Committee

In addition to an internal Equity Group, EPA should establish an advisory board on environmental equity, referred to in Figure 3 as the "Equity Analysis/Policy Advisory Subcommittee," in the style of the Science Advisory Board. This external group would consist of highly credible and impartial experts who could perform individual case reviews and offer policy recommendations to the Agency on equity issues. This group would fulfill the functions of policy review and consultation. The membership of the board should reflect the range of intellectual perspectives on equity, including philosophers, economists, sociologists, anthropologists and grassroots groups.

The subcommittee would be a group with standing membership and would be responsible for developing positions on individual cases referred to it by the internal mechanism within EPA. It would be responsible for selecting appropriate

operational definitions for the term "equity" for application to given situations. The internal EPA equity group would incorporate the advisory committee's recommendations into Agency activities as it saw fit.

3. Identification of Research Needs

Both the Equity Group and the advisory committee would highlight areas in which additional research and data collection were needed to understand the distributional impacts of environmental policy. These needs could be addressed on an ad-hoc basis or by formal inclusion in the research plans of the EPA Office of Research and Development or Office of Policy, Planning and Evaluation.

9.3.2 Phase Two: Long Term

The long term objective is the internalization of skills for analyzing and considering equity in EPA decisionmaking. This can occur with the aid of experience gained through interaction with the various resource groups and the advisory board described above.

"Internalization" would be oriented towards affecting and building internal processes which are equity sensitive and would take place in the following areas:

- *Systematic planning and program review*

The internal group would develop guidelines for program review which become part of the Agency strategic planning and program evaluation processes. This would begin with at least one regional and one program pilot project to develop guidelines and methodologies and then become mandatory for all regional and Headquarters strategic plans, depending on the outcome of the pilot projects. Equity sections of the strategic plans would be reviewed by the Equity Group.

- *Periodic equity "audits"*

The internal group could expand its activities to include periodic audits of the institution, its existing and emerging programs. Such audits would focus on broad issues of environmental equity such as: the social and geographic distribution of benefits and burdens, the allocation of scarce resources for risk reduction/management, and of communities' participation in risk allocation decisions which could affect the quality of their lives.

10.0 COMMENTS FROM EXTERNAL REVIEWERS

10.1 SUMMARY OF COMMENTS

10.1.1 Major Points

- EPA should be commended for taking up the issue but has a considerable ways to go to strengthen and implement its recommendations. No specific time tables, actions or anticipated outcomes are given with the recommendations.
- The report overstates the lack of data on environmental risks to racial minority and low-income communities. The report identifies lack of data as a major finding, but EPA is not planning activities to remedy this gap. EPA should request funding for data needs.
- Some high-level officials view equity as a public relations issue. The communications plan released by Rep. Henry Waxman is indicative of EPA's lack of commitment to solve environmental inequities and the dishonesty/disrespect with which EPA treats racial minority organizations. EPA should not continue to attempt to co-opt legitimate leaders.
- EPA should appoint a special assistant to the Administrator for environmental equity with decision-making authority, budget and staff.
- EPA has recognized the need for a new Farmworker Protection (FWP) Rule for 12 years but still none exists. 5 staff are devoted to the FWP Rule, but 52 staff work on radon gas protection which affects middle-class single-family homes. EPA should immediately issue enforceability provisions of the FWP Rule to make the existing regulations enforceable.
- EPA is one of the worst federal agencies in terms of integration of its workforce. EPA should put people of color employees in substantive decision making positions.
- EPA should integrate environmental equity into Operating Year Guidance, strategic plans, and Agency themes.
- EPA should work with civil rights groups to equitably implement pollution prevention.
- EPA should establish an Environmental Equity Advisory Board.
- After more than 2 decades of operation, why has EPA (and the report) failed to address inequitable siting concerns? EPA's current position of delegating authority over facility siting to private industry and states creates and perpetuates environmental inequities. The report does not go far enough in calling for mandated permitting requirements that would force states and private industry to address siting equity. EPA should examine aggregate risks in the permitting process.

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- A national health care policy, national industrial policy and a national energy policy are necessary to address environmental inequities. The Administrator should take the lead in coordinating other federal agencies to develop these policies.

10.1.2 Michigan Coalition

- EPA should be commended for taking up the issue but has a considerable ways to go to strengthen and implement its recommendations. The recommendations could produce some important results, but in their current form they appear general and weak. No specific time tables, actions or anticipated actions are given with the recommendations. When will the Agency state that it will take action?
- Most important issue is the implementation of environmental equity policies.
- The report overstates the complexity of defining environmental equity. This gives the impression that EPA is casting doubt on the existence of the problem.
- The report overstates the lack of data on environmental risks to racial minority and low-income communities. There is also more information about the *impacts* of environmental hazards on these communities. EPA's definition of risk is too narrow and does not include anxiety, depression, sleep disturbances and others.
- The report almost totally ignores issues of cause and effect. No mention of housing discrimination, poverty or imbalances in political access and power.
- There is no mention of industry's role in promoting environmental inequities. Industry should be required to use nontoxic materials to eliminate hazardous byproducts of manufacturing.
- There was no mention of intra- and inter-agency coordination.
- Three of the proposals contained in the March 1990 letter to the Administrator were omitted from the report: 1) require, on a demonstration basis, that racial and socioeconomic equity considerations be included in Regulatory Impact Assessments; 2) enhance the ability of Historically Black Colleges and Universities and other minority institutions to participate in and contribute to the development of environmental equity; and 3) appoint special assistants for environmental equity at decision-making levels within the Agency.
- The report would have been strengthened if more ongoing input had been solicited from external groups and individuals.
- The report fails to acknowledge the expertise (experience and common sense) of community groups in addressing environmental problems.
- There are high-level officials that view equity as a public relations issue. EPA needs to publicly acknowledge that environmental equity issues are real and serious problems.
- Authors were "encouraged" by the following:

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- Geographic targeting of high-risk populations;
 - The Administrator's April 1991 policy statement: "The consequences of environmental pollution should not be borne disproportionately by any segment of the population."
 - Recognition of the general lack of health effects by race and income.
 - Recognition that EPA and other government agencies can improve communication.
 - Recognition of the need for environmental equity awareness training.
 - Recognition of the need to ensure that EPA programs are equitable, that enforcement actions reflect the degree of risk, and that access to decision-making is available to all communities.
- Report recommendation #1: EPA should not only increase the priority that it gives to environmental equity issues, it should make environmental equity the *top priority*.
 - Report recommendation #2: Race and income information should be routinely included in risk assessments. Concern voiced over the statement that studies of health effects and exposure should collect and disaggregate data by race/income "*to the degree feasible*."
 - Report recommendation #3: Deep concern stated that the recommendation calls for moving "toward" incorporating equity considerations in the risk assessment process.
 - Report recommendation #4: A sound recommendation but it should have a time table.
 - Report recommendation #5: Environmental equity impacts of proposed rules should be done on a routine basis, not only "where appropriate."
 - Report recommendation #6: Although this recommendation has much potential, specifics on how it will be implemented are lacking.
 - Report recommendation #7: EPA should do more than *increase current* outreach and communication efforts. EPA should involve racial minority and low-income people in environmental policy-making.
 - Report recommendation #8: Target dates should be set. EPA should appoint a special assistant to the Administrator for environmental equity with decision-making authority, budget and staff. The external advisory committee is extremely important.
 - A national health care policy (including a basic floor of health insurance), national industrial policy and a national energy policy are necessary to address environmental inequities. The Administrator should take the lead in coordinating other federal agencies to develop these policies.

10.1.3 Southwest Network For Environmental And Economic Justice

- The communications plan released by Rep. Henry Waxman is indicative of EPA's lack of commitment to solve environmental inequities and the dishonesty and disrespect with which EPA treats people of color organizations.
- The Southwest Network sent a letter to the Administrator in July 1991, and EPA has still not responded (as of 3/18).
- EPA treats the issue as recent in origin, but grassroots groups have been dealing with environmental problems for decades.
- The report avoids acknowledging environmental inequities.
- There is no analysis of causes of environmental inequities. EPA policies, including delegation of programs to state/local governments, voluntary agreements with industry, and market incentives, disproportionately impact racial minority and low-income communities.
- The report fails to mention the farmworker protection (FWP) rule. EPA has recognized the need for a new rule for 12 years, but still none exists. Five staff are devoted to the FWP Rule, but 52 staff work on radon gas protection for middle-class single-family homes. It took EPA 3 weeks to cancel Alar (after Meryl Streep testified before Congress about risks to white, middle-class babies). In contrast, EPA reached the conclusion that it should cancel use of Parathion in 1987 but withheld action until staff leaked word of the coverup in 1991.
- EPA has been dragging its feet continually since 1980 on dealing with lead poisoning. EPA shredded information indicating that inner-city children were exposed at higher than reported levels. In the Dallas lead smelter case, EPA is proposing lead cleanup in a racial minority neighborhood which is 50 times less protective than exposure for the population in non-contaminated areas (white neighborhoods).
- EPA's "objective" risk assessment/risk management process has been continually subject to political manipulation. EPA routinely factors politics and power into its major risk management decisions. An excellent example is EPA's decision to ban Alar and its inaction on banning Parathion. Furthermore, EPA aggregates exposure in ways that dilute the vulnerability of racial minority populations.
- While the report identifies lack of data as a major finding, EPA is not planning any major effort to remedy this data gap. EPA has never asked Congress for a major appropriation for research on farmworker risks or other environmental equity issues.
- Exposure to pesticides, lead, air pollution, toxic dumps and incinerators are all results of EPA policy implementation. For example, EPA's policy of promoting incineration as an acceptable waste disposal method impacts primarily racial

minority communities because they are being targeted as sites for the incinerators.

- EPA does not have a policy or standard practice of translating relevant materials into non-English languages. Authors claim that EPA has translated more of its materials into Polish than it has into Spanish.
- EPA is one of the worst federal agencies in terms of integration of its workforce, which is especially true of racial minorities in substantive decision-making positions.
- EPA has given the equitable implementation of its programs and statutory responsibilities a low priority. The FY93 Operating Year Guidance has been finalized for each office but environmental equity priorities are not included anywhere. No EPA official with ranking as high as L. Crampton or E. Hanley has disavowed either of their memos released in February.
- EPA's policy with respect to Native American tribes is premised on treating tribes as states but not delegating power to tribes until each has developed an "adequate" environmental infrastructure. An example is EPA's denial of standing for the Yakima Tribe to be a party to the Hanford, WA federal facility compliance agreement.
- The priority that EPA gives Third-world issues and programs compared to the priority of Eastern European countries is baffling in terms of EPA's "scientific" risk-based approach to priorities.
- Regional implementation of the report's recommendations will require national policy leadership and oversight.
- Individual pollution prevention projects could have a good effect on ecology but a new and greater risk to people of color maintenance workers without EPA consideration of the tradeoffs.
- How does EPA plan to include grassroots organizations in regulatory negotiations.

1. Recommendations from the Authors

1. EPA should accept the probability that people of color are at greater risk because of the location of their homes and call for widespread pollution prevention.
2. The Agency should develop a major EPA policy which creates a "presumption of equity" in EPA actions and requires an equity impact analysis for major rules, programs, actions, reviews, etc.
3. EPA should integrate environmental equity policy into Operating Year Guidance, strategic plans, and Agency themes.
4. EPA should work with civil rights groups to implement pollution prevention in an equitable manner.

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5. Outreach and communication: Do not continue to attempt to co-opt legitimate leaders. Work with us in mutual respect.
 6. EPA should develop formal Federal Register requirements for all state and local grant, permit, delegation and enforcement policies.
 7. The Agency should implement oversight of state and local grant, permit, delegation, and enforcement for equitable implementation.
 8. The EPA should establish an Advisory Board with representatives from community-based and labor organizations.
 9. EPA should request funding for data needs.
 10. EPA should support a General Accounting Office investigation into whether state programs are in fact equitable.
 11. Legislation: EPA should support the Conyers bill, Waxman bill (lead), Chavis bill (RCRA Reauthorization) and others.
 12. EPA should put people of color employees in substantive decision making positions and listen to input. The Agency should open dialogue and encourage participation of employee organizations in developing overall EPA policy.
 13. The Environmental Equity Workgroup should be assured of its independence. Unions and employee organizations must be involved.
 14. The EPA should work with the U.S. Department of Agriculture and environmental groups to include equitable considerations and civil rights and labor groups in "power brokered" decisions.
 15. EPA should develop an ongoing relationship with the Congressional Black Caucus and other groups.
 16. EPA should reopen and reject the 1977 decision withholding application of Civil Rights laws to environmental laws and programs.
 17. EPA should immediately issue the enforceability provisions of the Farmworker Protection Regulations to make the existing regulations enforceable.
 18. EPA should apply the findings of the National Academy of Sciences Report on Pesticides and Children to children exposed in farmworker situations. EPA currently pretends either that children do not work in the fields or that children are no more vulnerable than adults.

10.1.4 Dr. Robert Bullard

- During the September 1990 meeting between the Administrator and the outside organizations, three major programmatic thrusts were explored: 1) an EPA policy (within 1 year) to address environmental inequities and disproportionate health risks borne by high-risk populations; 2) an EPA science panel (within 1 year) to advise the Agency on environmental equity issues; and 3) budget resources to address equity problems, i.e., a "targeted approach to impact those

most at risk. The report does not indicate that any of these actions have been initiated.

- The report contains a selective, biased and superficial review of the literature on the nature and severity of environmental problems faced by low-income and racial minority communities.
- The report did not produce one piece of original research or new information. The Environmental Equity Workgroup failed to grasp the interrelationship between race, class and environmental decision-making. A more in-depth and comprehensive report and action plan could and should have been produced.
- The report omits the rich and voluminous literature on environmental politics which challenges the notion of a "value-free" science and application of technology.
- The report attributes class factors as the reason for the elevated risks borne by people of color. In addition to racial barriers (i.e., segregation), environmental inequities result from a host of factors including the distribution of wealth, housing and real estate practices, land-use planning, redlining, and differential enforcement of environmental laws.
- The report failed to make the link between domestic and global ecological inequities.
- The report failed to acknowledge the existence of the Cerrell Report (prepared for Chemical Waste Management; stated that the best place to site facilities was in politically disadvantaged communities.) The question of "Who gets what, where and why?" is often a political decision and may have little or nothing to do with science and objective criteria.
- Nowhere in the report is the issue of institutional racial discrimination addressed.
- After more than 2 decades of operation, why has EPA (and the report) failed to address inequitable siting concerns? The report failed to mention that the siting inequities uncovered by the GAO in 1983 are worse in 1992. Siting inequities have increased as a direct result of more stringent federal environmental regulations and the difficulty (public opposition) in siting new facilities. EPA's current position of delegating facility siting to private industry and states creates and perpetuates environmental inequities. The Agency has done little to encourage local and state governments to adopt equitable facility siting plans.
- The report does not go far enough in calling for mandated permitting requirements that would force states and private industry to address siting equity. EPA should examine aggregate risks in the permitting process. The Agency can develop methodologies to address multiple exposures in "saturated" communities.
- EPA should require translations in predominantly non-English speaking (i.e., Spanish) areas where waste facilities are proposed.

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- The report states that there are numerous examples of poor communities seeking a waste site or industrial facility but does not cite any of these cases.
 - The report offers no insights as to why EPA has done so little to protect those who are most vulnerable. For example, the Agency has consistently delayed and dragged its feet on the lead-based paint, soil and drinking water problem. The report also failed to mention the West Dallas lead smelter case.
 - The report glosses over the pesticide problem faced by workers and those who live in nearby migrant labor camps. The report emphasizes the Agency's risk-based decision-making but does not explain the difference in actions taken against Alar (3 weeks) and Parathion (5 years).
 - EPA will not be able to build an effective outreach program in racial minority communities without addressing the question of environmental justice and trust. Residents in these communities perceive the EPA as protecting industry not the citizens.
 - The report demonstrates the unevenness and lack of awareness of equity among EPA's regional offices and did not explain regional disparities.

10.1.5 Human Environment Center

- The report makes no distinction between adults and children in the area of risk assessment.
- Far too little attention was paid to the special needs of urban communities.
- EPA could do a much better job of addressing inequitable environmental problems by using data bases which analyze neighborhood composition by race and income level.
- The Community-Right-To-Know Program (TRI) is underfunded by the federal government.

10.2 COMMENTS FROM EXTERNAL REVIEWERS

THE UNIVERSITY OF MICHIGAN
School of Natural Resources

April 1, 1992

Post-It™ brand fax transmittal memo 7671		# of pages > 8
To <i>Reina Milligan</i>	From <i>Bunyan Bryant</i>	
Co. <i>EPA</i>	Co. <i>U of M</i>	
Dept.	Phone # <i>(313) 764-1511</i>	
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Ms. Reina Milligan
Office of Policy & Planning Evaluation
Water & Agriculture Policy Division
401 M Street, S.W.
U.S. Environmental Protection Agency
Washington, D.C. 20460

Dear Ms. Milligan:

Please find enclosed a copy of the Review of the EPA Environmental Equity Workgroup Report. We are truly sorry for the delayed response. But, we look forward to a provocative and meaningful discussion. We also are sending a copy of the critique to other people who will be at the meeting. We also encourage you to send them a copy of the Review of the EPA Environmental Equity Workgroup Report.

If you have any questions regarding what is written herein, then please do not hesitate to get in touch (313) 763-2470.

Sincerely,

Bunyan Bryant
Bunyan Bryant
Associate Professor

Paul Mohai
Paul Mohai
Assistant Professor

BB:keh

Dana Building 430 E. University
Ann Arbor, Michigan 48109-1115



Review of the EPA Environmental Equity Workgroup Report

April 1, 1992

**Bunyan Bryant, Paul Mohai, Benjamin Chavis,
Michel Gelobter, David Hahn-Baker, Charles Lee, Beverly Wright**

In this report we want to be critical in ways that are helpful in order to move the agency forward in addressing this important issue. We know that agency staff have put in countless number of hours and are personally attached to the outcome of this Report. Although critiques are often times hard to hear because of our personal involvement we none-the-less ask you to read our comments with openness and try to hear what we are saying. Even though we have tried to be detached and objective, our pain and our anguish may be reflected throughout some portions of this document; try not to let the pain stand between you and your understanding of our concerns. Because the cold war is over and the world is at peace for the most part, we should be able to turn our attention to pressing social and environmental problems here at home. If we have the political will, there is nothing that we cannot do, and we firmly believe this. We start with micro policy issues reflected in the Report. The last section of our critique comes from a more macro analytical framework; we want to nudge you to take the necessary steps to observe and implement environmental equity within a much larger context. Without environmental equity firmly seated within the context of much larger policies, then we will continue to fight a rear guard action.

While the Environmental Protection agency (EPA) has been given a challenging and historic mission of including environmental equity as a part of its policy decision making we feel that the most important issues are not so much what has been committed to paper but the implementation of environmental equity policies so that people no matter where they live or what color they are can live with confidence that their biophysical environment is safe and nurturing. Although historically the effects of multiple pollutants in non-attainment areas have disproportionately impacted people of color and low income groups, it is only recently that scholar activists, primarily people of color, were able to bring currency to environmental equity issues by both their activism and their scholarly work. Although long overdue, the EPA should be commended for at least taking up this charge, but the agency still has a considerable ways to go to strengthen and implement its recommendations.

While the report contains recommendations that if implemented could produce some important results, in its current form the recommendations appear general and weak. They lack force and conviction on the part of the agency. Every recommendation begins with "EPA could" or "EPA should." At what point is EPA ready to state that it will take action? In some cases, recommendations are further weakened by indicating that they will be carried out "where appropriate." This is a significant loophole. What are the criteria for "appropriate" and who will decide when the criteria are met?

Contributing to the lack of force of these recommendations is the absence of specifics and time tables as to how and when recommendations are to be carried out (if in fact they will be carried out). Also, descriptions of the anticipated outcomes of carrying out these recommendations are lacking.

Troubling also is the Report's casting of the background information on the problem of environmental injustice. The Report appears to go out of its way to make the concept of "environmental equity" a complex one. The impression left is that the EPA is intentionally casting doubt on the existence of this problem (since we can't be sure of what it really is, can we be sure that the problem is real?). EPA also appears to be casting doubt by overstating the scarcity of evidence. Although more information is definitely needed in order to fully understand all the ramifications of environmental injustice, the evidence is considerably more than ample that the problem exists.

The following are more detailed comments about our reactions:

- 1) The Report needs to acknowledge the existence of other data regarding the distribution of environmental hazards by income and race such as those included in Mohai and Bryant (1992). The EPA Report includes only 3 of the 16 studies discussed by Mohai and Bryant. Also, considerably more information about the impacts of environmental hazards exists than the EPA Report acknowledges when one begins to look beyond the incidence of lead and the incidence of cancer and disease. These include psychological impacts (anxiety, depression, sleep disturbances, impairment of cognitive functioning, and others) resulting from noise, odor, perceived risks, loss



in property values, and the diminishment of other quality of life factors. The issue of environmental equity cannot be fully addressed with the narrow definition of risk put forth in this document. Although there is a clear need for more data regarding the distribution and impacts of environmental hazards by income and race, the Report's emphasis on lack of existing data gives the appearance of a strategy of denying that the problems exists.

- 2) In the section entitled "Defining the Issues" (pages 7 to 10), the Report also appears to overstate the complexity of the concept of equity. This overstatement once again takes on the appearance of denying the problem. We can't be certain about what environmental equity is; so how do we know that a problem exists.
- 3) The Report almost totally ignores issues of cause and effect. The most detailed statement of cause and effect is given on page 2 where it is stated: "The causes of these differences (in exposure to environmental problems) are often complex and deeply rooted in historical patterns of commerce, geography, state and local land use decisions and other socioeconomic factors that affect where people live and work." This same explanation is repeated on page 13. The term "historical patterns" appears to imply "accident" or coincident." Nowhere does the report mention the factors of housing discrimination, poverty (and the job and educational discrimination which leads to disproportionate poverty among minorities), or imbalances in political access and power.
- 4) The EPA should not just recognize the need to increase the priority it gives to environmental equity, but it should make it the top priority. By making it the top priority, we all will undoubtedly benefit from cleaner and safer biophysical environments. As state in the Report, "everyone has a stake in environmental equity because it is also an argument for better environmental protection generally" (page 2, paragraph 4).
- 5) Given the disproportionate impact of environmental insults on communities of color and low-income people, there is nothing more fundamental than getting industries to change their production strategies, particularly as more and more waste is generated in an ever growing market. We were alarmed that none of the recommendations dealt specifically with industry and the role it plays in promoting environmental injustice. Industry should be required to use nontoxic materials in its manufacturing to eliminate hazardous waste as an outcome of production. Communities of color will more often than not be the brunt of multiple environmental insults and are expected to subsidize the overall growth of the economy with their health and their lives.
- 6) There is also a need to communicate not only with communities of color, but EPA needs to communicate across its own units as well as with other governmental regulator agencies in order to formulate consistent and non-contradictory policies. While there was no mention of intra- and inter-agency coordination, we feel that this is definitely important. A policy of sound, productive inter- and intra-agency coordination, we feel, will help solve equity problems in the long run. Environmental inequities will not go away unless we address fundamental issues that are responsible for so much suffering and pain.
- 7) The Report highlights on page 6 only 4 of the 7 proposals put to EPA by the Michigan letter of March 1990. Three very important proposals contained in this letter are omitted. These include the following:
 - require, on a demonstration basis, that racial and socioeconomic equity considerations be included in Regulatory Impact Assessment;
 - enhance the ability of Historically Black Colleges and Universities and other minority institutions to participate in and contribute to the development of environmental equity;
 - appoint special assistants for environmental equity at decision-making levels within the agency.
- 8) We feel that the Report could have been strengthened if the methodological approach had solicited ongoing input from those who have spent years working on this issue. For example, if our ongoing support had been solicited, then three proposals listed above may not have been left out of the Report and fewer issues would be raised about its final outcome.
- 9) The report fails to acknowledge the expertise of community groups in addressing environmental problems. EPA has the science, community groups have the experience, but no one has a monopoly on common sense. Community groups have expertise equally important to that of the EPA in addressing these issues.

- 10) We recognize the hard work that has been done to put this report together, but clearly there are elements in the high reaches of the agency that view equity issues as public relations issues. EPA needs to publically acknowledge that environmental equity issues are not public relations issues but real and serious problems on which the agency needs to take decisive action.
- 11) Risk assessment is a process in making decisions and has flaws. Risk assessment alone is not enough to solve the problem

Although more work needs to be done we felt encouraged by the following:

- 1) Geographic targeting (pp. 1, 2) We support EPA's effort to target those environmental problems which pose the greatest risks nationwide to human health and the environment.
- 2) Recognition that "the consequences of environmental equity should not be born disproportionately by any segment of the population" (p. 3) We agree with the Administrator's statement, but the real proof of the matter will be in doing something about this statement.
- 3) Recognition of a general lack of data on environmental health effects by race and income and the fact that diseases that are known to have environmental causes are not typically disaggregated by race and socioeconomic groups, except for lead poisoning (p.3).
- 4) Recognition that great opportunities exist for EPA and other government agencies to improve communication about environmental problems with members of low-income and racial minority groups (p. 4).
- 5) Recognition of the need for environmental equity awareness training for EPA officials in Regional Offices. (p.4).
- 6) Recognition of the need to ensure that EPA programs and operations are equitable and that grants are available to communities of all races and socio-economic status; and recognition of the need for enforcement actions and compliance monitoring in minority and low-income communities reflect the degree of risk and EPA's ability to reduce risk in minority and low income communities, and making sure that access to decision making is available in all communities (pp. 8, 22, 25)

Comments on Recommendations

"EPA should expand and improve the level and form with which it communicates with racial, minority, and low-income communities, and should increase efforts to involve them in environmental policy making." Increasing the effort is not enough. We want EPA to involve people of color and low-income people in environmental policy making. We recommend that EPA involve people of color in the implementation of the following recommendations. By involving people of color, who have been at the forefront in the environmental equity movement could enhance communication between the agency and people of color.

Recommendation 1

"EPA should increase the priority that it gives to issues of environmental equity.

Although EPA should be commended for asserting this intention, we feel that it is not enough. Because the level of increase is unclear, we therefore, strongly recommend that environmental equity become the top priority. In addition, lacking significantly are the specifics of how this intention is to be translated into action. The statement and the agency's plans are stated in general terms only and do not provide a clear idea nor assurances of exactly how environmental equity will become a priority for the agency. In concrete terms, what will be the anticipated outcomes of making environmental equity a priority of the agency?

Recommendation 2

"EPA should establish a research and data collection plan and maintain information which provides an objective basis for assessment of risks by income and race."

We believe that this is an important step and commend the EPA for recognizing its importance in achieving the goal of environmental equity. However, we are quite concerned about the qualification that the agency makes when it states on p. 31 that it will do so "to the degree feasible." How is "feasible" to be determined and who will make that determination? We are concerned that this qualification may come to be a significant loop hole and will effectively eliminate important assessments of risk by income and race. We believe that race and income information should be routinely included in risk assessment. Furthermore, we strongly urge EPA to involve scholars of color from universities around the country to be involved in this data collection.

Recommendation 3

"The EPA should move toward incorporating consideration of environmental equity into the risk assessment process. In calculating population risk, distribution of environmental exposures and risks across the population should be estimated, where relevant. In some cases it may be important to know whether there are any particular population groups at disproportionately high risk."

While this is an important goal, we are deeply concerned about the word "toward" in the first sentence. While the word implies goal "directedness," since we do not have a time line, it is difficult to monitor progress. Twenty years from now we could be still be moving toward considerations of environmental equity into the risk assessment process, and we may not be any closer than we are today. Again this is an important goal, but we are concerned about the qualification "where relevant." It is stated in the discussion of this Recommendation on page 32 that: "Information on race and income will not be necessary or appropriate for all risk assessments, and EPA should devote time to deciding what cases demographic information should be included in risk assessment." Our concerns are similar to that of Recommendation 2. How are "relevant" and "appropriate" cases to be determined and who is to make that determination? We believe that race and income information should be gathered on a routine basis in meeting this objective. We feel that people of color should not only be involved in the risk assessment process, but that they should also be a part of multi-cultural training of all staff involved in risk assessment and management.

Recommendation 4

EPA should identify and target opportunities to reduce high concentrations of risk to different population groups, employing approaches developed for geographic targeting.

We think that targeting various communities to reduce high concentrations of risk is a sound idea. We also hasten to add that there might be some rural communities where people of color are differentially exposed to environmental insults. We feel that specific starting and ending dates would be most helpful in evaluating both the process and the outcome. Also people of color should be included in the targeting as well as included in workshops in order to learn GIS skills.

Recommendation 5

"EPA should, where appropriate, selectively assess and consider the distribution of projected risk reduction in major rulemakings and agency initiatives.

Changing rules and rulemaking processes to reflect environmental equity considerations is extremely important. We are concerned about such words as "where appropriate." Who decides whether its appropriate? And again who defines what is feasible? This appears to be a significant loophole. Economic impacts of major rules are assessed on a routine basis. We believe that environmental equity impacts of proposed rules should also be made on a routine basis and that no rule should be adopted that does not result in movement toward environmental inequity remedies. It is ironic that one of the most important sections is also the shortest. We hope that this in no way reflects the importance the agency is placing upon this section. And just as important, we feel that people of color should be intricately involved in rulemaking and agency initiatives.

Recommendation 6

"EPA should review and selectively revise its permit, grant, monitoring and enforcement procedures to address high concentrations of risk in racial minority and low-income communities. Since state and local governments have primary authority for many environmental programs, EPA should emphasize its concerns about environmental equity to them.

There appears to be much potential in this recommendation. However, lacking are specifics. How are these procedures to be revised? And how will the risks in racial minority and low-income communities be addressed? What would be the outcomes? The examples listed on page 35 of the ways in which EPA could implement this recommendation likewise appear promising but they lack specifics of how these would be accomplished. Thus it is difficult to determine what the results of implementing these proposals would be. We feel that people of color should be involved in permit, grant, monitoring and enforcement at all levels of the agency.

Recommendation 7

"EPA should expand and improve the level and forms with which it communicates with racial minority and low-income communities and should increase efforts to involve them in environmental policy-making."

As in other of the recommendations, this represents an important objective but specifics of how it will be accomplished are not well defined. Although it is important that minority and low income communities be adequately informed by EPA of matters affecting them, how will information and the concerns of these affected communities be incorporated into EPA policy making? People of color should be intricately involved in planning and implementing such communication strategies. Such strategies should include a multi-media approach including the use of TV series show at prime time, comic books, people of color newspapers and information dissemination through the churches.

Recommendation 8

"EPA should establish mechanisms to ensure that environmental equity concerns are incorporated in its long-term planning and operation."

This is an extremely important step. We wonder why the sub-recommendations are stated so tentatively. "EPA could" should be change to "EPA will" in each case. Target dates for achieving each of these sub-recommendations should be established. In addition, EPA should appoint a special assistant (a person of color) for environmental equity with decision-making authority, budget, and staff. We recommend that this person of color report directly to the Administrator. The external Environmental Equity Advisory Committee is an extremely important component. We too feel that people of color should not only make up two third of the committee, but people of color from the Michigan Group, the United Church of Christ Commission for Racial Justice, the Gulf Coasts Tenants Organization, the Southwest Organizing Network on Environmental and Economic Justice, and the PANOS Institute will be consulted on the criteria, the process by which members are selected and rotated.

Environmental Equity and a Health-Care Policy

In this section we want to push you to your outer limits. Again we hope that you are open and are willing to hear us and the pain that we have experienced from talking with people from around the country. We basically feel that environmental equity cannot be obtained unless there is a national industrial policy, a national energy policy, and a national health-care policy. To be serious about environmental equity, we have to place it within a broader context for substantive discourse. Because the environment is all inclusive, and overlaps with other areas of concern, this necessitates expanding our horizons to meet contemporary challenges. We feel it can be done.

While much of the Report is involved in showing how complex environmental equity issues really are, we find that the Report may provide the rationale for inaction. We could revisit this same Report two decades from now and we may not be closer to answers to complex questions raised in the Report than we are now and hundreds of thousands may have suffered. To focus our attention on these complexities without providing bold relief to people in need is to be less than responsible. For example on page 13 it is stated that a person's activity pattern is the single most important determinant of environmental exposures for most pollutants. To us this simply means that some people within the same neighborhood may subsidize production or growth and development more than others with their discomfort, their pain and large sums of money paid in medical health care bills. The true cost of producing goods and services in our society is not calculated.

Because of the thousands of new chemicals coming on the market and eventually released into the air, water and soil, those who are already differentially impacted by noxious pollutants can expect to be impacted even more. The number of people experiencing sickness and pain may increase in the years to come. Yet it is ironic that 38 million people are not fully protected by medical health care insurance. We hypothesize that a considerable number of them live in non-attainment areas and most are vulnerable to a variety of toxic waste. We feel that the society as a whole should subsidize growth and development, rather than relegating the burden to people of color the poor or those unable to buy their way into cleaner and more pristine environments. And while cancer rates between blacks and whites may be explained by poverty, these differences may not be explained when we control for social class; when poor blacks are compared to poor whites a larger percentage of the former may be less healthy than their white counterparts.

The impression we get from the Report is that the issue is too complex and therefore it has to be researched more. This reminds us of a statement that Martin Luther King made about the paralysis of analysis. We want to become empowered from analysis-not paralyzed by it. We may be called to act in the face of inconclusive data. Are not there some times when we should make policy based upon significant associations rather than cause and effect? Yet even in the face of conclusive data we feel the agency has been less than helpful. In ameliorating the impacts of lead on black children (eight million of them exposed yearly in our inner cities and for every 10 to 15 microliters of lead in the blood stream there is a loss of 4 I.Q. points) we feel that the agency has not been able to respond in any meaningful way. We feel the decisions for less than adequate action may be related to political and economic decisions. Meanwhile millions of black and inner city children will pay for the price of production for the rest of their lives and there will be millions more joining the ranks. Environmental equity means providing a basic floor of health insurance for those in society that are most vulnerable to aggravated or toxic induced disease.

Environmental Equity and a National Industrial Policy

The United States is probably the only industrialized country in the world without an industrial policy. To date, the effects of not having such a policy has been devastating to the millions of people who have lost their jobs due to plant closings and layoffs. Here recently workers in Ypsilanti, Michigan lost out to the workers in Arlington Texas because the Arlington workers were willing to make more concessions. States are placed in the position by powerful industries to compete with one another by marketing anti-labor or anti-environmental packages in order to attract them. Unemployment brings with it the whole alphabet soup of attendant problems such as a lowered self-esteem, drug and alcohol dependency, wife and child abuse. Since people of color are often the "last hired and the first fired," we are deeply concerned about the disproportionate number of them who have joined the ranks of the unemployed. We were also alarmed that this Report failed to address the negative environmental consequences of industry and what could be done about them.

We need an industrial policy to help us shift from a war-time to a peace-time economy with as little disruptions as possible. We need an industrial policy that retrains workers for new jobs and one that supports them during this transitional period. We need an industrial policy that will put people to work to produce socially useful goods and services, and one that will rebuild, and revitalize our cities to make them decent places to work and live. We need an industrial policy that provides incentives for industry to invest in America and one that supports the sound stewardship of our land, our natural resources and the air we breathe. We need an industrial policy that requires non-toxic materials to be used in the production process in order to curtail pollutants at the end of the production cycle. We need an industrial policy that supports full employment and one that is benign to the environment. If other democratic and industrialized countries in the world can have such a policy, then why can't we?

Environmental Equity and Energy and a National Energy Policy

Environmental equity cannot be justly served unless we have a national energy policy. The amount of energy we waste in this society is staggering. And as long as we are energy dependent on sources of energy from other nations, this places us in a position to use military might to defend international corridors for the transport of energy supplies. We must become much less dependent on foreign sources of energy by conserving our own. In 1976 Dennis Hayes stated that "We annually consume more than twice as much fuel as we need to maintain our standard of living. We could lead lives rich, healthy, and fulfilling--with much comfort and with more employment--using less than half the energy now used." Through energy conservation we not only become less dependent on international energy supplies but we can create more jobs. In fact there is evidence to suggest that a sustainable energy economy would produce more jobs than one based on fossil fuels. Flavin and Lessen (1990:41) report that a study in Alaska found that "weatherization created more jobs and personal income per dollar than any other investment, including the construction of hospitals, highways, or hydroelectric

projects." From weatherization alone there are a number of different jobs that can be created for home insulation workers, carpenters, sheet metal workers and others. From the solar industry, there is a need for photovoltaic engineers, solar architects. Too there are a vast number of jobs that will come from recycling, recovering, reusing and reducing our waste stream. Although the jobs may be numerous, we need to make sure that they are decent paying ones.

Although little noticed by the general public, protection of the environment and abatement and control of pollution have grown to be a major sales-generating profit making, job creating industry. While some continue to argue that environmental regulations destroy jobs, throwing millions out of work the fact of the matter is that most industries close, not solely because of strict environmental regulations, but because of obsolete equipment, stiff competition, declining sales, lack of efficient production, and problems with raw materials (Kazis and Grossman 1982). In fact pollution abatement control within the next decade will likely equal or exceed the U.S. Department of Defense Budget, creating numerous jobs (Bezdek, 1992). Therefore we not only need a national energy policy to reduce our dependency on foreign energy sources, but we need an energy policy to stimulate enough jobs, where people of color will no longer be disproportionately unemployed. A sound energy policy and environmental equity can go hand in hand. The question is whether we have the political will to make this happen. Therefore we challenge the Administrator to take on the task of intra- and inter-agency coordination for a sound national health, industrial, and energy policy so that people can live and work without fear in a sustainable, healthy, and productive environment. Only when this happens can we say that environmental equity has been served.

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Southwest Network for Environmental and Economic Justice

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March 18, 1992

Coordinating Council

Co-Chairs

Rubén Solís
Odessa Ramirez
Robin Cannon
Richard Moore

William K. Reilly, Administrator
United States Environmental Protection Agency
Washington, D.C. 20460

Dear Mr. Reilly:

Members

Arizona:

Rose Marie Augustine
Tucson
Mike Flores
Sells
Rosa Zubia
Surprise
Roland Manakaja
Havasupai Nation

California:

Lucille Allen
Richmond
José Bravo
San Diego
Robin Cannon
Los Angeles
Pam Tau Lee
San Francisco
Lori Salinas
Fresno

Colorado:

Mike Maes
Denver

New Mexico:

Antonio Luján
Las Cruces
Joe Monge
Santa Teresa
Johnny Russell, Jr.
Bloomfield
Donalyn Torres
Mescalero

Nevada:

Odessa Ramirez
Carson City
William Rosse, Sr.
Western Shoshone
Nation

Texas:

Susane Almanza
Austin
Antonio Díaz
Austin
Patsy Oliver
Texarkana
Rubén Solís
San Antonio

Lead Organization:

SouthWest
Organizing Project
Richard Moore
Albuquerque

On behalf of the SouthWest Network for Environmental and Economic Justice (The Network), we are submitting these comments to the Environmental Protection Agency's Environmental Equity Report.

It must be noted that we were never offered the opportunity to comment on this report and we strongly object to the fact that EPA has attempted to publish the report without input from communities of color and indigenous peoples. It is our communities and organizations which are the focus of this study, so we have a direct interest in its content.

We must also note with considerable alarm that the most recent draft of the Equity Report was released publicly amidst serious controversy. At the press conference in Washington D.C. staff members for Congressman Henry A. Waxman of California released a "Communication Plan" prepared by EPA's chief communication official. According to Congressman Waxman, this plan is designed to "co-opt the mainstream (civil rights) groups" to prevent the issue from reaching a "flashpoint".

Congressman Waxman commented that "the agency views the environmental equity initiative as a public relations matter, not an opportunity to understand and respond to the very real health problems faced by people of color...The communication plan is a cynical 'divide and conquer' strategy. It seeks to drive a wedge between activist groups and traditional civil rights organizations. It shows no appreciation of the serious environmental threats faced by minority communities."

Based on our experiences thus far with the present administration of the Environmental Protection Agency, we would have to agree with Congressman Waxman's assessment of the EPA, and assume that we can expect nothing more than business as usual from the Agency.

We would also like to state our support of the dissenting opinion submitted by the National Federation of Federal Employees, Local 2050, and the concerned members of the Environmental Equity Workgroup and EPA staff. The concern expressed by these employees offers true hope for the possibility of assuring that the mission of the EPA is fulfilled for all peoples.

On July 31 1991, the Southwest Network for Environmental and Economic Justice sent a letter to EPA Administrator William Reilly. The letter cited examples of the disproportionate impact of pollution and contamination on communities of people of color throughout the Southwest United States. The letter also provided clear examples of policies pursued by the EPA that have been detrimental to our communities.

We would like to ask that the July 31 letter be included as part of the Environmental Equity Report.

The Network made a number of requests to the Agency asking for information about EPA policies in communities of color, and asking for a meeting with the Administrator.

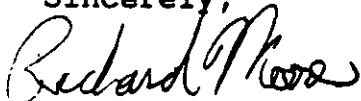
To this day, eight months later, the Southwest Network has not received a response from the Administrator to the requests made in the July 31, 1991 letter.

The experiences and concerns outlined above raise for us a very grave question: "How can we honestly believe that the current Administration is willing to engage us in an open dialogue and commit to working together with us to address the very real and serious problem of environmental racism?" These are the most recent examples of the disrespect and arrogance of the Agency which we have experienced throughout its history, and which has led to the need for developing an "Environmental Equity Report".

We continue to stand committed to working with the Environmental Protection Agency to assure that it fulfills its mandate for a safe environment in all communities, however we must make clear that we will no longer tolerate the policy of disrespect and dishonesty which continues to plague the EPA at the highest levels.

With these concerns in mind, we are submitting our comments to the Environmental Equity Report. Our comments are general and specific. Please feel free to contact us if you have any questions.

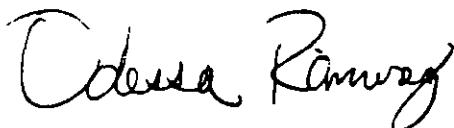
Sincerely,



Richard Moore
Co-Chair



Robin Cannon
Co-Chair



Odessa Ramirez
Co-Chair



Ruben Solis
Co-Chair

**SOUTHWEST NETWORK FOR ENVIRONMENTAL AND ECONOMIC JUSTICE
COMMENTS TO THE ENVIRONMENTAL PROTECTION AGENCY
ENVIRONMENTAL EQUITY REPORT**

INTRODUCTION

The Report is more significant for what has been omitted than what has been included. The Report treats the environmental equity issue as an academic debate rather than an EPA policy, political, and civil rights issue. Similarly, In its twenty-one years of existence, EPA has never acknowledged that many environmental problems adversely affect people of color groups.

Ironically EPA treats the issue of environmental justice as a concept of "recent" genesis. In a recent cover article in a new EPA publication, Administrator William Reilly "met with key participants and received information on environmental equity that he found 'especially disturbing.'" This perspective is fundamentally incorrect.

In March, 1990, Administrator Reilly met with the so-called "Michigan Coalition" (a predominantly African-American ad-hoc group) and suddenly discovered "environmental equity." As a result of this meeting, Reilly agreed to commission a workgroup study with input from people of color organizations. We sincerely applaud EPA's historic effort, but, as you may see from our comments, the report is clearly limited and behind.

Grassroots people of color organizations have been dealing with "environmental" problems for decades before the term "environmental equity" was coined.

Grassroots people of color organizations have been dealing with "environmental" problems for decades before the term "environmental equity" was coined. "Civil rights" issues, such as decent housing and decent working conditions constituted environmental equity in action long before mainstream environmental groups discovered these problems. EPA staff have consistently raised these same concerns to the level of the Administrator since at least 1984, with no success.

The Report findings miss the reason that EPA actions have such an adverse impact on people of color. EPA cannot begin to address equity problems until it acknowledges their existence, and this document studiously avoids any such acknowledgement.

EPA cannot begin to address equity problems until it acknowledges their existence, and this document studiously avoids any such acknowledgement.

Because there is no acknowledgement of the problem, there is no analysis of what is causing the problem, and an inadequate analysis of how to address the problem. For example, several of EPA's major policy thrusts work to reinforce environmental neglect.

The Agency is irreversibly committed to certain policy initiatives, regardless of whether they create unfair burdens of environmental exposure. Several policies such as delegation of powers to State and local governments, voluntary deals with industry, and market incentives all have direct and indirect inequitable features. These policies all involve EPA-brokered negotiation of the power to distribute environmental risks and these negotiations consistently exclude people of color groups. In short, EPA is consciously distributing environmental control to the same groups which people of color for years have found to be the chief source of racial inequity. Although most environmental statutes provide EPA the authority to delegate programs, none of these statutes provides EPA with the authority to administer its programs inequitably.

The report, incredibly, fails to even mention the farmworker protection regulations.

The Report, incredibly, fails to even mention the farmworker protection regulations. The Agency's response to the risks of migrant farm workers (over 90% African-American, Asian, and Latino) is particularly disturbing. Although the average lifespan of these farmworkers is barely fifty years, these people are not entitled to the same protections as some "endangered species." Instead species such as the blunt nosed leopard lizard are afforded more protection from deadly pesticides than people of color farmworkers.

In 1979, EPA recognized that regulations to protect farmworkers and their families from exposure to agricultural pesticides were totally inadequate: EPA started revising its regulations. Currently, the Agency has still not developed new farmworker protection regulations and has not seriously enforced the existing obsolete regulations for years. Given the lifespan of people of color migrant farmworkers, the twelve-year-delayed regulations, such as they are, will be far too late for too many laborers.

The Agency's priorities are clear: twelve years of inaction on farmworker protection, with a skeleton staff of five. Contrast this with the 52 employees EPA has working on radon gas protection for middle-class single-family homes. Or the ability of EPA to cancel the use of the chemical Alar on apples some three weeks after actress Meryl Streep testified before Congress about white, middle-class babies consuming minute residues on some apple products. In contrast, EPA reached the conclusion that it should cancel the use of the pesticide Parathion in 1987 because of the health threat to farmworkers, but withheld action until a staffmember leaked word of the coverup last year.

I. FINDINGS

Given the evidence of specific events, specific policy decisions, and data the report cannot but include the following findings:

A. The Federal Government, and EPA in Particular, has Consistently Administered Environmental Programs which result in inequitable risks for people of color populations.

Lead Policy Implementation

p. 12, "EPA's actions in the 1980's to eliminate nearly all the lead in gasoline were a major step in the direction of environmental equity": This statement is either unbelievably naive or an incredible attempt to rewrite history. It is unsupported by the facts.

...EPA itself has been dragging its feet continually since 1980.

The Report correctly identified lead exposure of African-American kids as a major environmental problem affecting health and education of our inner city kids. However the Report failed to note that EPA itself has been dragging its feet continually since 1980. The Agency's record was so poor that the administration was admonished by a Federal District Court action involving the way that lead refiners and EPA conspired to ignore the racial implications of their jointly developed lead exposure policy.

During this period EPA was shredding information indicating that inner-city children were exposed at even higher levels [EPA shredded staff reports that showed that lead monitors which recorded airborne lead levels of fumes actually breathed by inner city residents correlated better with lead blood levels than lead monitors which were remote]. EPA restricted enforcement of the lead rules to such an extent that EPA attorneys had to file Freedom of Information Act Requests to find out what was going on in their own cases. EPA developed a "methodology" for "rounding-off" lead pollution figures which was unheard of in the history of mathematics in order to give an extra break to small refiners.

The agency's record continues today. In the infamous Dallas lead smelter case [highly contaminated communities of color adjacent to lead smelters -- the cases, beginning in the 1970's, are still unresolved] EPA is proposing lead cleanup in people of color neighborhoods which is fifty times less protective than exposure for the population in non-contaminated areas (white neighborhoods). The Agency attempted to delay for twenty years lead standards for drinking water, at the same time Vice President Quayle was having lead contamination removed from his vice presidential mansion, with EPA assistance. Why can't African-American kids in Washington drink the same water that the Vice President's kids drink?

B. EPA Has Delayed the Farmworker Protection Regulations for Twelve Years Because it Knows that the African-American, Latino, Native-American, and Asian-American Workers Do Not Have the Political Power of the Agribusiness and Chemical Interests.

[see comments in introduction]

C. EPA's Dependency on "Objective" Risk Assessment/Risk Management Has Been Continually Subject to Political Manipulation.

Risk Assessment/Risk Management Bias

p. 20, NO. 3, "Risk assessment and risk management are not in themselves biased...": This is not true. EPA routinely makes both risk assessment and risk management decisions based on pure politics and power of constituencies. Because EPA's priorities are always subject to interference from political power, EPA's reliance on its slogan that "risk based priority" setting will automatically result in equitable treatment for people of color, is misplaced.

In addition, EPA's risk assessment efforts are only as good as the data plugged in and is constantly subject to data gaps, methodological challenges, and delays. If EPA intends to study environmental equity until it has good data, the agency will never act. The data on exposure of people of color will always be subject to aggregation problems, just as this report is. If you aggregate all exposure to people of color, rather than the particular population exposed, the relationship may be hidden [e.g., if you aggregate people of color eating eaters in Georgetown S.C. with people of color fish eaters in Georgetown, D.C., you conclude that there is no exposure problem related to fish consumption in communities of color].

EPA routinely factors politics and power into its major risk management decisions.

EPA routinely factors politics and power into its major risk management decisions. An excellent example of this is the comparison between its decision to ban alar and its decision to ban parathion. EPA moved to cancel the use of the chemical Alar on apples some three weeks after actress Meryl Streep testified before Congress about white, middle-class babies consuming minute residues on some apple products. In contrast, EPA reached the conclusion that it should cancel the use of the pesticide Parathion in 1987 because of the health threat to farmworkers, but withheld action until a staffer leaked word of the coverup last year.

These considerations run throughout EPA decision-making. Another good example is dioxin. The Report touches on contaminated fish consumed by Latino, Asian, Indian, and African American subsistence communities such as Georgetown, S.C. and Columbia River in Washington. However, EPA has cut a deal with industry to ignore

the fact that people of color subsistence populations are eating toxic chemicals thousands of times more concentrated than the same toxic chemicals found at Times Beach and Love Canal, where EPA spent hundreds of millions cleaning up soil that white families were walking on. EPA's own internal risk numbers showed 10-6 for Times Beach and 2 in 10 for dioxin in fish consumed by people of color.

Lack of Data

...EPA has never asked Congress for a major appropriation for research.

p. 11: EPA complains that data is incomplete, a major problem, if true. However, EPA is not planning any major effort to remedy this data gap. Environmental equity does not show up on EPA internal ORD long term planning priorities. All agree that data on farmworker risk is inadequate, yet EPA has never asked congress for a major appropriation for research. In addition, EPA never seems to find a problem regulating risk with "insufficient data" where the politics are on the other foot (Alar?). If the Agency says it lacks adequate statistics, why hasn't EPA done what Benjamin Goldman, Dr. Robert Bullard, or the United Church of Christ have done in their studies?

There is no reason why EPA could not have done a decent job of correlating some existing data by now. Even without Toxic Release inventory data and expensive mainframe computers, EPA has not even approached Benjamin Goldman's the Truth about Where You Live or Robert Bullard's Dumping in Dixie. EPA implies that it just discovered environmental equity two years ago. What was the Agency's response to people of color employees' letter to the Administrator six years ago (published in the EPA Journal) asking EPA to take action?

D. EPA Policies work directly and indirectly to deny adequate environmental conditions for people of color populations.

Policies such as ignoring inequitable state and local programs, aggregating risk, cost-benefit analysis are continually used against the interests of exposed communities of color (see Analysis section). Exposure to pesticides, lead, air pollution, toxic dumps and incinerators are all results of EPA policy implementation. For example, EPA's policy of promoting incineration as an acceptable waste disposal method impacts primarily on communities of color who are being targetted as sites for the construction of incinerators.

Translation of Materials

p. 25, translation: EPA does NOT have a policy or at least a practice of translating relevant materials. In Kettleman, EPA is siding with Chemical Waste Management in preventing local residents from receiving materials in Spanish. In the important farmworker protection area, EPA declined to translate many of the materials suggested by UCC and UFW. EPA has translated more of its materials into Polish than it has into Spanish.

E. Segregation of the workforce and continuing lack of cultural diversity has resulted in biased input in policy decisions.

Segregation of Workforce

p. 8, "Defining the Issues": The Report mentions EPA's "cultural diversity" effort but fails to note that EPA is one of the worst agencies in the federal government in terms of integration of its work force. This is especially true with respect to segregation of people of color in substantive decision making

EPA is one of the worst agencies in the federal government in terms of integration of its workforce.

positions involving mission of the agency. African American and Latino employees are typically assigned to civil rights, personnel, administration, and other areas which will not affect overall EPA policy. In the recent EPA awards ceremony, honoring those projects the Agency finds most important, people of color professionals accounted for less than two per cent of the award winners. EPA has demoted, harassed, fired, and driven out of the agency as many people of color as it has promoted. EPA refused to pay the conference fee for people of color employees to attend the People of Color Summit and has harassed employees who have had any contact with Summit organizations. The EPA management has declined to involve EPA people of color employee organizations in the environmental equity issue (Blacks in Government, Minority Bar Association, National Federation of Federal Employees, Hispanic Advisory Council, etc.).

F. EPA has awarded a low priority to the equitable implementation of its programs and statutory responsibilities.

The Report implies that EPA "discovered" the concept of environmental equity. Both people of color employees, Office of Civil Rights Staffers, and outside organizations such as the United Church of Christ have been raising the issue to EPA management for at least six years. The Southwest Network for Environmental and Economic Justice sent a letter detailing the inequitable enforcement policies of the Agency. What has been the Agency's response?

p. 4, Summary of Recommendations, #1, "EPA should increase the priority it gives to issues of environmental equity": The Report never really explains, in terms of EPA operating procedures, how EPA will accomplish this. For example, the FY 1993 individual office Operating Year Guidance has now been finalized for each office, yet environmental equity priorities are nowhere to be found. As far as the actual operating units of EPA are concerned, environmental equity is not on the radar screen.

Nor is environmental equity found in long term FY 1992-1996 Strategic Plans for individual offices. This means that not only does EPA not intend to address environmental equity issues now, it will not even begin to address these issues until 1996. When the Michigan coalition met with Mr. Reilly over a year ago, the expectation was that EPA would be taking action on these issues. It is also important to note that EPA staff had raised these same issues to the Administrator as far back as 1985. In contrast to the lack of real action correcting the problem, EPA's public relations office has whipped into action immediately, with stories in the Post and the Times, and a strategy to co-opt civil rights, church and academic groups.

...not only does EPA not intend to address environmental equity issue now, it will not even begin to address these issues until 1996.

p. 9, bullet "reflect risk-based priorities...": No environmental equity issues are identified in the FY 1993 budget or FY 1993 OYG. See comment # 4, above. Both the Lew Crampton and Edward Hanley memoranda support this finding. No EPA with ranking as high as Crampton or Hanley has disavowed either of these memos, and EPA declined (in the Waxman hearing to officially disavow the memos.

p. 31: The verbs used in this section evidence EPA's lack of commitment to any real policy change on this issue. Making "clear statements" and giving "signals" will not address twenty years of Agency policy of inequity. "Indicating" our interest to States will not change existing inequitable practices. The same remedies were ineffective 30 years ago. If the Agency is serious about change, it will implement the recommendations listed below.

G. EPA and other federal agencies have established a patronistic catch-22 policy with respect to Native American tribes. This two pronged policy is premised on treating tribal governments as "States" but not delegating power to the tribes until each has developed an "adequate" "environmental infrastructure".

Native Americans

With respect to Native American issues, EPA describes pilot programs which are the exception to the rule: the environment in which Native Americans are forced to live has been raped beyond recognition. Major Native American issues include the basic rights to natural resources and issues such as drinking water, groundwater, Federal facility cleanup, OMB cuts, to Bureau of Indian Affairs and other infrastructure resources, specific problems in a number of Native American lands, Uranium and other mining, Nuclear testing and contamination of Pacific islanders New Mexico and other areas.

One example of the failure and inconsistency of EPA's "infrastructure" approach is EPA's denial of standing for the Yakima Tribe to be a party to the Hanford, Washington, federal facility compliance agreement. Although EPA policies state that Tribes should be treated like States, the Agency has consistently excluded the Yakimas from negotiations on the extremely contaminated Hanford site, even though the site is on land ceded by the Yakimas, the Yakima's still retain rights on the site, and the Yakima reservation is adjacent to the site.

H. EPA needs to reopen and examine the 1977 decision withholding application of civil rights laws to environmental laws and programs.

II. GENERAL COMMENT

Public Relations - Spin Control

p. 4, Finding #4, This finding appears to express EPA's basic approach to environmental equity -- "if they would just listen to us, environmental racism would disappear, we just have a failure to communicate." Although not stated outright in the report, internal EPA memos detail the Agency's intent to treat environmental equity as a "spin-control" PR exercise with no substantive policy changes reflected anywhere in the Agency's operating guidance.

...EPA memos detail the Agency's intent to treat environmental equity as a "spin-control" PR exercise with no substantive policy changes reflected anywhere in the Agency's operating guidance.

EPA Commitment

p. 4, Finding #5; We note that EPA removed the statement "there is a strong commitment on the part of EPA managers and staff to address the environmental equity issues." Deleting this comment could apply to much of the Report. This is a significant change in the direction of the Report in that it is the first acknowledgement that EPA management does NOT view environmental equity as a priority. There is a very strong question as to whether EPA has any commitment to this issue, as can be seen in

many EPA actions: co-opting interested organizations; Vic Kimm as a witness; Cabinet Status bill support; the EE Report; Agency Priorities; etc..

Exposure

p. 13, the "potential" for exposure...: People of color don't just have the "potential" for exposure, people of color are exposed. Yes, the "differences in exposure rates are complex and deeply rooted in many aspects of society..." These "aspects of society" are known to people of color as "racism" and the issue is whether EPA policies are reinforcing environmental racism. Since EPA does not acknowledge a problem, it never addresses this issue.

Fish Consumption Studies

p. 17, 18, studies of "licensed anglers" may misrepresent the number of Native Americans consuming fish, as noted on p. 18. We suggest you consult the work and input of Dr. Jeffrey Foran of George Washington University, and others familiar with this research area.

A study of fish consumption in people of color populations generally does not reflect the fish consumption by "subsistence populations", which, by definition, implies consumption dependence. We are not necessarily interested in how many African Americans eat broiled snapper in restaurants in Georgetown, DC, we are interested in who eats how many catfish in Georgetown, SC.

Examples of EPA Projects

p. 23, The Reports cites the Office of Pesticide Programs as an example of EPA's equitable programs. This is the same office which has been sitting on the farmworker protection regulations for 12 years and delayed the ban on parathion for five years. We note that the latest draft deleted the example of the Office of Water's fish survey. We would hope you have some better examples.

p. 41, EPA projects: The projects mentioned in this appendix are important first steps taken by independent midlevel managers and concerned EPA staff. However, many of the projects listed consist of studies, surveys, outreach projects, communications strategies and other actions which do not involve a basic policy change or high level-high priority policy commitment. These good deed projects would disappear immediately with the slightest objection from local mayors, state officials, politicians, or special interests.

III. ANALYSIS

Universal Standards "Do Not Raise All Boats"

p. 1, under "Environmental Equity": Although the "standards" are universal, they are not uniformly applied or enforced and therefore exposure is not "the same" for all sources. Although some statutes and regulations provide for the "most vulnerable", EPA aggregates exposure in ways that dilute the vulnerability of people of color populations. Likewise, in risk assessment and risk management EPA disaggregates exposed populations to increase the cost benefit balance against people of color. For example, if there is a 10-6 cancer risk and 10² population exposed to the risk, then EPA can ignore the risk. In this way, EPA can always ignore exposed populations of people of color one at a time because for each pollutant and each source exposure there will be insufficient exposed population to produce the one theoretical cancer or other risk sufficient to overcome the cost benefit equation.

Federalism and Cost Benefit Policy

There is a more invidious aspect to EPA's use of two major policy thrusts, cost benefit analysis and the "presumption against federal standards" (the Federalism Executive Order). By delegating the power to assess risks to the State and local levels, and then applying cost benefit analysis, EPA can effectively "value" the life of a Mississippi African American baby at less than half of the "value" of a middle class white Connecticut baby without a trace of overt discrimination because the policies applied are "neutral" on face.

International Issues

p. 8, international issues: The discussion on "international equity" raises some additional issues. It is difficult to understand how the Administrator is going to have any credibility with Third-world countries given EPA's record and credibility with Third-world populations in this country. In addition, the priority that EPA gives Third-world issues and programs compared to the priority of Eastern European countries is baffling in terms of EPA's "scientific" risk based approach to priorities. The cultural diversity issue also continues to appear: EPA has consistently recruited Polish and Eastern European employees for Eastern European projects while ignoring Latino employees in developing its Mexican program.

A good example of EPA's neglect of such problems is the manifestation of anencephaly along the Mexican border, where the U.S. trade agreement is subsidizing pollution along the Rio Grande.

"Neutral" Process and Inequitable Results

p. 9, 10, "While EPA can ensure that its processes...": This is an inadequate response, in that EPA could easily find that delegation to State and local government is a neutral process, therefore this policy carries no environmental equity responsibilities for EPA. It is difficult to find evidence of overt racism in EPA's past "process" yet this process has resulted in widespread environmental racism. What does EPA propose changing? EPA, like all other federal agencies with delegable powers, is ultimately responsible for ensuring that the statutes that it administers are equitably implemented.

Farmworker Data

p. 19, Farmworker section. This section is apparently attempting to make the absurd point that, "since we are poisoning a few white farmworkers along with Latino, African-American, Native American, and Asian workers, we should all be satisfied". Does EPA think that civil rights groups would be happier if only more white workers were poisoned? Is it not racism because growers don't bother to selectively spray their workers? If there is some worthwhile point in this section, we fail to see it. The section is more significant for what it omits than what it says: no mention of the long delayed farmworker protection regulations. This section alleges that there is insufficient data on health impacts of farmworker exposure. Yet EPA must have developed some measure of the health benefits of regulating farmworker exposure for the cost benefit analysis for the farmworker rule. The Agency, however, has consistently failed to ask Congress for more studies.

Clean Air Act

pp. 25-26, CAA: EPA could utilize provisions of the Clean Air Act and other statutes to address environmental equity questions. However, in the past, the Agency has used CAA and other provisions to support discriminatory environmental impacts against people of color. There is nothing in this Report which suggests anything other than business as usual. We note that you have deleted the paragraph on CAA offsets - why? With respect to equitable compensation, congress and EPA appear to be moving in the opposite direction. The new Clean Air Act Amendments, and EPA proposals, provide for aggregating or averaging pollution sources by putting the dirtiest source in more depressed economic areas. Other market based approaches that EPA is pushing also favor pollution in one place, capital returns in another.

Comments about Current Recommendations

p. 5, #6, This is a good suggestion but does not go far enough. If EPA is really serious about addressing environmental inequity, it should implement the recommendations above.

p. 16, "more study of this issue is required...": This issue has been studied to death. Study is not required, analysis and action are required. EPA should accept the probability that people of color are at greater risk because of the location of their homes and call for widespread pollution prevention.

p. 24, siting and permitting of waste facilities: Typically, EPA delegates siting and permitting decisions to State and local governments, with an automatic EPA rubber stamp approval. For example, the New York RCRA approval process includes state and county officials and nearby landOWNERS. The EPA process is systematically designed to exclude those with the least power and most exposure.

p. 26, #3: The Report states here that equity issues are best addressed at the regional level. Yet the Report also states that there is great regional and State variation and that the most significant finding about the regional offices was the ignorance of the environmental equity issue. This recommendation (regional lead) fails to recognize that these problems require national policy leadership and oversight.

Cover memo. The cover memo from Mr. Wolcott suggests that some of the most obvious remedies, oversight of the equity of State delegated programs, are limited by statute. Is EPA trying to argue that civil rights statutes do not apply to environmental statutes? We can find no such statutory provisions. Is the Agency saying that congress intended these statutes to be administered, delegated and implemented in an arbitrary and inequitable manner? We can find no such legislative history.

p. 21, communication: EPA's fundamental approach appears to be a communication strategy, as noted in numerous internal memos. "Outreach" and "communications Strategy" will not work if, it appears, EPA views this as a mission to convince people of color that they shouldn't worry so much about inequitable exposure. This smacks of the approach that EPA attempted to apply in the Dallas case: "they don't need a clean up, we'll just teach them how to grow grass on their yards and then they wont notice the lead so much".

EPA expansion of outreach and participation:
How will EPA expand its outreach with its current lack of credibility? It would seem that the first step in outreach would be to take credible action, build up your credibility before you go "out to reach" people. An outreach program built on co-opting

civil rights, church, and education organizations is counterproductive and lowers the Agency's credibility. In addition, EPA has very few people of color in substantive decision-making positions who know anything about communicating with grassroots organizations. Using only a regional approach will not address problems which are national in origin and which EPA refuses to recognize.

p. 36: EPA does not need to "tell" people of color what it is doing with respect to people of color studies and pilot projects: EPA needs to listen to people of color and take decisive action. To the extent that EPA is developing an "incinerators are your friends" communications strategy, we do not regard this as a dialogue among equals.

p. 25, pollution prevention: pollution prevention may have mixed results for people of color workers or residents. We support strongly EPA's efforts at pollution prevention if the Agency actively initiates environmental equity review of its pollution prevention actions as we are suggesting for other actions. Currently, individual pollution prevention projects could have a good effect on ecology but a new and greater risk to people of color maintenance workers without EPA consideration of the tradeoffs.

We are interested in joining the Agency in promoting this effort in a manner beneficial to all.

p. --: The Report recognizes the interdependence of agencies and organizations in addressing environmental equity issues. There are several good examples of this. EPA, the Natural Resources Defense Council, and the Paper industry teamed up to exclude communities of color who relied on fishing from a court settlement involving dioxin in paper mills. EPA, the Department of Agriculture, OMB, and the National Agriculture Chemical Association teamed up to exclude farmworker input in the farmworker protection regulations. EPA and Housing and Urban Development teamed up to exclude apartment renters from getting adequate protection from radon. We would like to know EPA's plans to start including grassroots organizations in these coalitions.

p. 31 Better data and better priority setting based on relative risk will ultimately make EPA's programs and policies fairer. However, as we mentioned earlier, there are policy changes which EPA could institute now. If EPA had been so concerned about the lack of data, why hasn't it asked congress for more money for such data needs? Why doesn't EPA support Representative Conyers bill on environmental equity? Why can't EPA perform analyses such as Goldman's?

IV. RECOMMENDATIONS

- a. The Agency should develop a major EPA Policy which creates a "presumption of equity" in EPA actions and requires an equity impact analysis for major rules, programs, actions, reviews, etc.**
- b. EPA should integrate Environmental Equity policy into Operating Year Guidance, strategic plans, and Agency Themes.**
- c. Pollution Prevention: EPA should work with civil rights groups to implement Pollution Prevention in an equitable way.**
- c. Outreach and communication: do not continue attempt to co-opt legitimate leaders. Work with us in mutual respect.**
- d. EPA should develop formal Federal Register requirements for all State & local grant, permit, delegation, and enforcement policy.**
- e. The Agency should implement oversight of State & local grant, permit, delegation, enforcement, for equitable implementation.**
- f. The EPA should establish an Advisory Board with representatives from community-based and labor organizations.**
- g. The EPA should request funding for data needs.**
- h. EPA should support a General Accounting Office investigation into whether State programs are in fact equitable.**
- i. Legislation - EPA should support the Conyers bill, Waxman bill, Chavis bill, and others.**
- j. Cultural diversity and the integration of the workforce - EPA should put people of color employees in substantive decision making positions and listen to input. The Agency should open dialogue and encourage participation of employee organizations in developing overall EPA policy.**
- k. Structure of Environmental Equity Workgroup - The Workgroup should be assured of its independence. Unions & employee organizations must be involved.**
- l. Relations with other agencies and organizations: The EPA should work with the US Department of Agriculture, DA, and environmental groups to include equitable considerations and civil rights and labor groups in "power brokered" decisions.**
- m. EPA should develop an ongoing relationship with the Congressional Black Caucus and other groups.**

n. EPA should reopen and reject the 1977 decision withholding application of civil Rights laws to environmental laws and programs.

o. EPA should immediately issue enforceability provisions of the Farmworker Protection Regulations to make the existing regulations enforceable.

p. EPA should apply the findings of the National Academy of Sciences Report on Pesticides and Children to children exposed in farmworker situations. EPA currently pretends either that children do not work in the fields or that children are no more vulnerable than adults.

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March 19, 1992

Mr. Robert Wolcott, Chairman
Environmental Equity Workgroup
Office of Policy, Planning and Evaluation
U.S. Environmental Protection Agency
Washington, DC

Dear Mr. Wolcott:

Enclosed please find a copy of my written comments to the Draft
EPA Environmental Report dated January 17, 1991.

Sincerely,

A handwritten signature in dark ink, appearing to read "Robert D. Bullard", is written over a horizontal line.

Robert D. Bullard
Professor

Enclosure

COMMENTS ON THE DRAFT EPA ENVIRONMENTAL EQUITY REPORT

Robert D. Bullard

Department of Sociology

University of California

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Introduction

The following comments are made in response to the EPA's draft report entitled **"Environmental Equity: Reducing Risk for All Communities"** dated January 17, 1992.

The following comments are the views of the author and do not in any way purport to represent the University of California. I was one of the persons (i.e., Michigan Coalition) who drafted the March, 1990 letter to EPA Administrator William Reilly and a member of the group that met with the administrator and his staff in September, 1990. However, I offer these comments as my own critique of the Equity Report..

Programmatic Initiatives

During the September, 1990 meeting with Mr. Reilly, three major programmatic thrusts were explored: (1) an EPA mandated policy (within one year) to address environmental inequities and disproportionate health risks borne high-risk populations, (2) set up a science panel (within one year) to advise the agency on environmental equity issues, and (3) budget resources to address equity problems, i.e., a "targeted" approach to impact those most at risk. After more than eighteen months, there is no indication in the Equity Report that any of these actions have been initiated by the agency.

Selective Literature Review

After more than eighteen months of "study," the EPA Workgroup on Environmental Equity has failed to grasp the interrelationship between race, class, and environmental decision making. First, the report contains a selective, biased, and superficial review of the literature on the nature and severity of environmental problems faced by low-income and communities of color in the United States.

The systematic omission of the published works that document the impact of discriminatory land use planning, differential enforcement of environmental regulations and laws, inequitable facility siting on communities of color is telling. The report makes only a passing reference to a handful of studies that have documented a relationship between sociodemographic characteristics of communities and environmental quality. However, numerous books have been written on this subject dating back to the early 1970s. Some of these works include Allen V. Kneese and Blair T. Bower, Environmental Quality Analysis (1972), D. K. Newman and D. Day, The American Energy Consumer (1975), Michael Greenberg and Richard Anderson, Hazardous Waste Sites: The Credibility Gap (1984), Louis

Blumberg and Robert Gottlieb, War on Waste (1989), Robert D. Bullard, Dumping in Dixie: Race, Class, and Environmental Quality (1990), and Benjamin Goldman, The Truth about Where You Live (1991). The research findings in these books show clear patterns where racial and ethnic minorities bear greater health and environmental risks than the larger society. These books were not cited in the Equity Report.

The EPA Equity Report has not produced one piece of original research or new information. More importantly, it has done a less than adequate job in synthesizing the state of the knowledge in the field of environmental equity. The report appears to reflect a half-hearted and less than serious treatment of the subject matter. Given the nature and importance of environmental and health problems facing low-income, working class, and communities of color in the United States, a more in-depth and comprehensive report and action plan could and should have been produced.

The omission of the rich and voluminous literature on environmental politics further weaken the credibility of the report findings. A growing body of multi-disciplinary environmental research (sociology, political science, economics, planning, law, ethics, engineering, natural resources, human ecology, etc.) is beginning to address equity concerns. Many of these disciplines are now challenging the notion of a "value-free" science, science policy, and application of technology. Is the reader to assume that the EPA has made and continues to make all of its decisions based on "value-free risk-based priorities?" We know better. The not so distant past is a reminder that the "politics of pollution" is alive and well in the USA. We offer the example of the agency's own Ann Gorsuch Burford, Rita Lavelle, and John Hernandez scandal in the 1980s. These were all advocates of "good science."

Environmental Racism, Fact or Fiction

Does racism exist in the United States? Environmental racism does not exist if we are to believe the EPA Equity Report. The report attributes class factors as the reason for the elevated risks borne by people of color. However, the report offers very little substantive and empirical evidence supporting its own contention.

On the other hand, there is overwhelming evidence documenting that the roots of institutional racism are deep and have been difficult to eliminate in the American society. Discrimination is a manifestation of institutional racism. Even in today's society, racism influences where an individual lives, works, and plays. Racism also influences the likelihood of exposure to environmental toxins and the accessibility to health care.

Environmental racism defends, protects, and enhances quality of life choices available to whites at the expense of people of color. Environmental racism is reinforced by governmental, legal, educational, economic, political, military, and religious institutions through policies and practices that have the

consequence (whether intended or untended) of differentially impacting people of color. For example, there is a direct correlation between the exploitation of land and the exploitation of people. To deny this fact is to deny an important (though painful) piece of this nation's history. The nation was built on free land (stolen from Native Americans), free labor (African slaves), and free men (only white men with property held the franchise).

There is substantial evidence indicating that the nation's industrial and environmental policies have not impacted all communities equally. The systematic targeting of people of color communities for noxious facilities such as sewer treatment plants, garbage dumps, landfills, incinerators, hazardous waste disposal sites, lead smelters, and other risky technologies is environmental racism. Excluding people of color from policy and decision-making boards, commissions, and staffs of governmental and nongovernmental organizations influences environmental policy outcomes.

Delaying remedial cleanup actions or bans on dangerous health-threatening chemicals, pesticides, and other toxins solely because the victims are mostly persons of color is environmental racism.

Allowing and encouraging dangerous chemicals, pesticides, and toxic wastes to be exported abroad to Third World nations is a form of environmental racism and ecological imperialism. However, the practice of targeting of people of color nation's for the export of toxins is an extension this nation's domestic toxic dumping policies. The Equity Report failed to make the link between domestic and global ecological inequities.

The Web of Institutionalized Barriers

African Americans are especially hard hit by environmental racism. No matter what their educational or occupational achievement or income level, African Americans are exposed to higher crime rates, less effective educational systems, high mortality risks, more dilapidated surroundings, and greater environmental threats because of their race.

Institutional barriers such as housing discrimination, redlining, and residential segregation make it difficult for African Americans and Latinos to buy their way out of health-threatening physical environments. For example, in the heavily populated South Coast air basin of the Los Angeles, over 71 percent of African Americans and 50 percent of Latinos reside in areas with the most polluted air, while only 34 percent of whites live in highly polluted areas.

The development of spatially differentiated communities where people of color are segregated from other Americans have resulted from governmental policies and marketing practices of the housing

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industry and lending institutions. Housing segregation follows a color continuum with African Americans being the most racially segregated minority group. Millions of African Americans are geographically isolated in polluted urban neighborhoods away from the expanding suburban job centers.

Some communities are spatially located on the "wrong side of the tracks" and subsequently receive different treatment when it comes to the delivery of public services including environmental protection. In addition to racial barriers, environmental inequities result from a host of factors including the distribution of wealth, housing and real estate practices, land-use planning, redlining, and differential enforcement of environmental regulations.

Selective Targeting and the "Smoking Gun"

Are some communities more suitable than others for locating waste disposal facilities? Very seldom is there a "smoking gun" found detailing the thinking behind facility siting. The EPA Equity Report failed to cite a single study challenging the notion that waste facility siting is based on objective criteria.

The 1984 report Political difficulties Facing Waste-to-Energy Conversion Plant Siting written by Cerrell Associates of Los Angeles was a smoking gun. The government-sponsored study confirmed what many people had suspected all along. Cerrell Associates (a private consulting firm) advised the California Waste Management Board to place waste-to-energy facilities (incinerators) in areas least likely to express opposition, older neighborhoods, and low socioeconomic neighborhoods.

The city of Los Angeles took the advise of the Cerrell Associates report and proceeded to plan the city's first modern municipal solid waste incinerator (LANCER 1) in the mostly African American and Latino South Central Los Angeles. In addition, private disposal companies and the state of California selected the mostly Latino communities of East Los Angeles and Kettleman City (located in the agricultural-rich Central Valley) for hazardous waste incinerators. Both hazardous waste incinerators were approved by the federal EPA.

The EPA Equity Report failed to acknowledge the existence of the Cerrell Report. By doing so, it also failed to acknowledge the role of government (i.e., California Waste Management Board) in systematically "targetin" some communities for locally unwanted land uses (LULUs) such as landfills, incinerators, and other noxious facilities. The question of "who gets what, where, and why" is often a political decision and may have little or nothing to do with science and some objective criteria.

Nowhere in the report is the issue of institutionalized racial discrimination addressed. There is a large body of sociological

studies that explain racial disparities in education, employment, housing, law enforcement, and other areas. Why is it that the report failed to consider racial discrimination as a factor that contributes to siting disparities between people of color communities and white communities as it relates to exposure to industrial toxins, dirty air and drinking water, and the location of noxious facilities such as municipal landfills, incinerators, lead smelters, and hazardous waste treatment, storage, and disposal facilities.

After more than two decades of operation, why has the EPA (and its Equity Report) failed to address inequitable siting concerns? The EPA has undertaken few initiatives on its own to address this problem. The Equity Report was correct in citing the 1983 General Accounting Office study Siting of Hazardous Waste Landfills and Their Correlation with Racial and Economic Status of Surrounding Communities. It is also worth noting that the GAO study was initiated only after mass protests in predominately black Warren County and District of Columbia Delegate Walter Fauntroy (who was then chaired the Congressional Black Caucus) requested a study. The GAO discovered that 75 percent of the offsite commercial hazardous waste landfills in EPA's Region IV were located in mostly black communities. African Americans make up about one fifth of the population in Region IV. The EPA did not followup this federal study in 1983.

The EPA Equity Report failed to mention the fact that the siting inequities uncovered by the GAO in 1983 are worse in 1992. For example, the two operating offsite commercial hazardous waste landfills in Region IV (Emelle, Alabama and Pinewood, South Carolina) are both located in Zip Code areas where African Americans make up the majority of residents. African Americans still make up only about one fifth of the region's total population in 1992.

Siting inequities have increased as a direct result of more stringent federal environmental regulations and the difficulty (public opposition) in siting new facilities. No new sites have gone in the region. The legacy of past discriminatory waste facility siting places African American residents in Region IV at greater health risks than other residents in the region. The Equity Report failed to acknowledge "past in present discrimination" (i.e., residuals of an earlier era and practices) and the effect on quality of life of communities of color.

It is not an accident that the first national study on toxic waste and race was conducted by a civil rights organization, not the federal EPA---the agency charged with environmental protection. The Commission for Racial Justice's Toxic Wastes and Race study was released at the National Press Club in 1987. The EPA did not take any action to followup this study in 1987. On the other hand, the Centers for Disease Control (CDC) and the Agency for Toxic

Substances Disease Registry (ATSDR) developed and or expanded several minority environmental health initiatives, including a study and a national conference.

Waiting for EPA to Act Can Be Hazardous to Your Health

The EPA only took action on environmental equity concerns in 1990, after a letter was written to the administrator by a group of social scientists who participated in a conference at the University of Michigan. The Equity Report is in part a direct result of this "outside" prodding.

Unlike the EPA, communities of color did not discover environmental inequity in 1990. They have been living (and many dying) with inequitable environmental quality for decades---most without the assistance of the EPA. The Equity Report correctly cites the 1988 ATSDR The Nature and Extent of lead Poisoning in Children in the United States: A Report to Congress study and points out the glaring racial and class dimensions of the lead problem. For example, lead affects between 3 to 4 million children, most of whom are African Americans and Latinos who live in urban areas. Among urban children 5 years older and younger, the percentage of African Americans who have excessive levels of lead in their blood far exceeds the percentage of whites at all income levels.

The ATSDR study found that for families earning less than \$6,000, 68 percent of African American children have lead poisoning, compared with 36 percent for white children. In families with incomes exceeding \$15,000, more than 38 percent of African American children suffer from lead poisoning compared with 12 percent of whites. Lead is a complex problem in that it touches a number of program areas and require cooperative working arrangements with multiple federal agencies, including environmental, public health, housing problem, and education.

The ATSDR study deemed lead as the "number one environmental health problems facing children." The Equity Report concurs that "sufficient" scientific evidence is available on lead and human health risks. However, the report does not provide any insights as to why the EPA has done so little to protect those who are "most vulnerable." The agency has consistently delayed and dragged its feet on the lead-based paint, soil, and drinking water problem. It is important to note that having sufficient facts and documented "proof" is not a strong predictor of the agency's action on environmental and health problems that disproportionately urban minority children. For millions of inner-city children, the agency's delaying tactic is tantamount to a life sentence in lead-contaminated environments.

The Equity Report also failed to mention some of the questionable decisions the agency has made regarding communities of

color and lead. A case in point is the EPA's mishandling of the lead problem in the West Dallas, Texas neighborhood. West Dallas residents still do not understand why the agency scrapped a 1983 voluntary cleanup plan proposed by the local lead smelter company. The EPA demanded another study.

On December 31, 1991, the EPA began a comprehensive cleanup of the lead-contaminated soil in West Dallas after more than a decade of delays, scandals, and excuses. An estimated 30,000 to 40,000 cubic yards of lead-tainted soil will be removed from the several West Dallas sites, including school property, the West Dallas Boys Club, and yards of 140 private homes. The West Dallas soil is scheduled to be dumped at a landfill in Monroe, Louisiana--a community that is 60 percent African American.

Moreover, the Equity Report failed to uncover the fact that all three of Dallas's lead smelters happened to be located in African American and Latino neighborhoods. It is for certain that the people in the Dallas neighborhoods were there long before the smelter. Moreover, West Dallas residents did not invite the polluting industries into their neighborhoods. Moreover, few residents actually worked in the plants that polluted their neighborhood, homes, and children.

Some Workers are More Equal than Others

All communities, neighborhoods, residents, and workers are not created equal. All environmental policies and protection measures are not applied uniformly across class and racial groups. People of color have had to wait longer than the general population for the same protection others take for granted. The case of farmworkers is a classic example of the double standards in environmental and health protection.

The protection (or lack of) accorded farmworkers---who handle dangerous pesticides---is a classic example of this problem. These workers have been waiting since 1979 for treatment as "first-class" workers. The ethnic composition of this segment of the workforce represents a classic case of occupational segregation. More than 90 percent of farmworkers are persons of color (African American, Afro-Caribbean, Latino, and Asian).

The Equity Report glosses over the pesticide problem faced by workers and those who live in nearby migrant labor camps. The report emphasizes the agency's "risk-based" decision making. However, the report fails to explain (using its own "science") its actions on the chemical Alar "scare" and its action on the pesticide Parathion. Action on Alar came in about three weeks, while action on Parathion was delayed for five years after the agency reached the conclusion that it should cancel its use.

The literature cited in the farmworker section is grossly

inadequate. For example, not a single piece of research by Dr. Marion Moses (who head the Pesticide Project and has written extensively on pesticides and farmworkers) is cited in the report. The Equity Report falsely assumes that environmental equity means that it is "acceptable" for the majority of farmworkers (people of color) to be poisoned as long as a few white farmworkers are poisoned along with them. Environmental justice advocates are not calling for white farmworkers to be have equal opportunity to be poisoned. That is not equity. However, equity demands that the EPA begin to address the differential value assigned to the health of farmworkers and those act equitably toward farmworkers who may be exposed to pesticides in the field and white-collar office workers who may be at risk from chemicals in a "sick" building.

It is unfortunate that the Equity Report uses "intuition," (rather than a systematic review of the literature) to assess the state of the pesticide exposure problem. For example, the report states: "Intuitively, one would expect that ethnic minorities who make up a large part of the documented and undocumented farm workforce might experience higher pesticide exposures" (page 19). It should not take an eighteen-month study to figure out that the general population runs fewer risks than farmworkers and their families from being exposed to malathion spraying and other dangerous pesticides.

The Sacredness of Local Land Use Planning

EPA's current position of relegating facility siting to private industry and states creates and perpetuates environmental inequities. The Equity Report failed to address inequitable and discriminatory state and local government institutions. Some of the siting inequities result from past discriminatory practices of local governments and private industry.

The EPA sanctions many of these discriminatory local government and private industry decisions by granting operating permits. The agency has done little to encourage local and state governments to adopt equitable facility siting plans. Defining the problem as a "local" land-use issue will not make it disappear.

The use of risk assessment/management procedures in siting and permitting incinerator plants justify and favor projects being pushed by both industry and policy-makers. Even William Ruckelshaus (a two-time chief of the EPA and current CEO of Browning-Ferris Industries) described risk analysis as "a kind of pretense."

The Equity Report failed to recognize the importance of siting and permitting decisions on equity. All communities are not treated the same when it come to facility siting. For example, Houston from the early 1920s to the late 1970s located 100 percent

of its city-owned municipal landfills and six out of eight of the garbage incinerators in black neighborhoods. From 1970-1978, three out of four of the privately-owned landfills were located in black neighborhoods.

Although African Americans made up only one-fourth of Houston's population, 82 percent of the municipal landfill sites (public and private) were located in black neighborhoods. White Houstonians used their "NIMBY" (not in my back yard) institutions to keep waste facilities out of their neighborhoods. Conversely, public officials and private industry responded by employing the "PIBBY" principle---"Place in Blacks Back Yard."

The decision to target black communities was made by an all-white Houston City Council. No black was elected to that office until 1972. Nevertheless, Black Houstonians had been fighting since the mid-sixties to keep garbage dumps out of their neighborhoods. The Kerner Commission reported that a riot took place on the predominately black Texas Southern University in 1967 after an eight year old black girl drowned at a garbage dump in the mostly black Sunnyside neighborhood.

Black and white communities are still separate and unequal. Some city councils, county board of supervisors, and federal judges still see black communities (but not their white counterparts) as compatible land use with garbage dumps, landfills, and incinerators. The Equity Report failed to cite a single case study documenting the targeting of African American communities for municipal landfills. However, numerous cases exist.

As recent as June, 1991, the Board of Supervisors in King and Queen County, Virginia selected a 420-acre site in a mostly black community for a regional solid waste landfill. The supervisors from 1969 to 1991 located all three of the county-owned solid waste landfills in black communities in the county. It seems that county leaders rate black communities as more compatible than their white counterparts for facilities where household garbage is dumped. County leaders see nothing inequitable or unjust about siting all of its landfills in black communities.

The EPA has taken the position of not involving itself in local land use and siting decisions. By backing away from federal equity requirements, the agency seems perfectly willing to allow the Houston's and the King and Queen County's of the nation to selectively dump on communities of color. These decisions mirror those made by local and state government under "Jim Crow:" everybody gets their garbage picked up, but only black communities get the landfills and incinerators.

EPA's regulations impact and influence local land use and facility siting in its power to grant permits. However, the EPA has "yet to meet a hazardous waste facility it didn't like." The

Equity Report does not go far enough in calling for mandated permitting requirements that would force states and private industry to address siting equity.

In addition, the EPA should examine aggregate risks in the permitting process. For example, a neighborhood like Chicago's Southeast side is "saturated" with abandoned toxic waste dumps, steel mills, municipal landfills, hazardous waste incinerators, salvage yards, grain elevators, and oil refineries. The EPA should have responsibility for protecting the Southeast side Chicago community from further risks that would result from siting another waste facility in the area? Current EPA policies do not calculate aggregate, cumulative, and synergistic risks posed by the various polluting industries in a specific neighborhood. The end result is a "sacrifice zone."

Here is where the agency might expand its use of "social impacts" in making permitting decisions. Surely, the agency can begin developing methodologies to address multiple exposure in "saturated" communities.

States Rights as Civil Rights

States are now talking about "fair share" plans for the interstate transport of municipal and hazardous wastes. No state wants to become the dumping grounds for another state's garbage or hazardous waste. Some states have resorted to outright bans (though illegal) and restrictions on out-of-state waste. Many states are now borrowing the jargon of the civil rights movement in defining fairness, equity, and justice in the interstate waste crisis. However, few states have begun to seriously address the problem of intrastate equity, especially as it pertains to waste facility siting and low-income and communities of color.

The federal government needs to take the leadership role in assuring that both interstate and intrastate equity plans are given equal consideration. Many local and state governments are the chief culprits in disenfranchising low-income, working-class, and minority communities and should not be given the chief responsibility for assuring that environmental equity (facility siting) is achieved.

Equal Opportunity Polluters

African Americans are not the only group hit by environmental injustice. Latinos and Native Americans are also affected. For example, the small rural town of Kettleman City, California has drawn national attention. Chemical Waste Management, Inc., the world largest waste disposal company, selected this small farmworker community of 1,100 residents as a site for a proposed hazardous waste incinerator. The company already operates a hazardous waste landfill in Kettleman City.

All of the public hearing and written material in Kings County was in English, although 40 percent of Kettleman City residents speak only English. In 1991, local residents filed a class action lawsuit El Pueblo Para el Aire y Agua Limpio (People for Clean air and Water) v. County of Kings. The lawsuit challenged the impact report, the use of English-only to communicate risks to local residents, and operating hazardous waste incinerators in mostly minority communities.

In January, 1992, a Superior Court judge overturned the Kings County Board of Supervisor's approval of the incinerator, citing its impact on air quality in the agriculture-rich Central Valley. The judge ruled that the county's environmental impact report was inadequate and that the county failed to involve local residents in the decision by not providing Spanish translations of material about the project. EPA should require translations in heavy non-English speaking (i.e., Spanish) areas where waste facilities are proposed.

This is an important point given the location of hazardous waste incinerators. For example, the nation's largest waste disposal company, Chemical Waste Management, operates or has under development five hazardous waste incinerators. All of the company's incinerators are located in communities which have high concentrations of minorities. The company operates an incinerator in Chicago's Southeast side (72 percent black and 11 percent Latino), Sauget, Illinois (73 percent black), and Port Arthur, Texas (40 percent black and 6 percent Latino). The company has incinerators under development in Emelle, Alabama (90 percent black) and Kettleman City, California (95 percent Latino).

Targeting Native Lands

The EPA Equity report gives the impression that communities are actively recruiting noxious facilities. For example, the report states: "[T]here are numerous examples of poor communities seeking a waste site or industrial facility to increase the tax base and create jobs" (page 24). The report fails to cite any of these "numerous examples" and does not differentiate who is actually doing the inviting. More often than not, it is the business and political "elites" (not the ordinary residents of the community) who have sought waste facilities as economic development.

Native American lands pose a special case for environmental protection. As environmental regulations have become more stringent in recent years, Native American reservations have become prime targets of waste disposal firms. Because of the special quasi-sovereign status of Indian nations, disposal companies have attempted to skirt state regulations which are tougher than the federal regulations. The threat to Native lands exists from New York to California.

More than three dozen reservations have been targeted for landfills and incinerators. Nearly all of the proposals have been defeated. In 1991, the Choctaws in Philadelphia, Mississippi defeated a plan to locate a 466-acre hazardous waste landfill in their midst. In the same year, a Connecticut company proposed to build a 6,000-acre municipal landfill on the Rosebud reservation in South Dakota. The giant landfill was proposed by a firm that had never operated a municipal landfill. The project was later dubbed "Dances with Garbage." The Good Road Coalition, a grassroots groups, using a recall election of the Tribal Council government, blocked the proposal to build the giant municipal landfill on Sioux lands.

Outreach vs Spin Control

The Equity Report's "outreach" strategy is more akin to a public relations campaign or "spin control" rather than any substantive efforts to address environmental problems that disproportionately impact people of color and low-income communities.

It is unlikely that the EPA can build an effective outreach program in communities of color without addressing the question of environmental justice and trust. For example, it is not uncommon for residents in communities such as Northeast Houston, West Dallas, Texarkana, Kettleman City, East Los Angeles, and Chicago's southeast side to view the EPA (and waste disposal companies) as the "enemy." Quite often residents in these communities perceive the EPA as protecting industry not local citizens.

People of color groups have begun to build a national movement against environmental injustice. In October 1991, the First National People of Color Environmental Leadership Summit was held in Washington, DC. This Summit demonstrated that white middle class suburbanites do not have a monopoly on environmental concern. Environmental activism was shown to be alive and well in African American, Latino, Asian, and Native American communities.

The four-day Summit was attended by 650 grassroots and national environmental leaders (representing over 300 people of color environmental groups). Delegates came from all fifty states including Hawaii and Alaska, Puerto Rico, Chile, Mexico, and the Marshall Islands to share their action strategies, redefine the environmental movement, and develop common plans for addressing environmental problems affecting people of color in the United States and around the world.

The Equity Report demonstrates the unevenness and lack of awareness of equity among EPA's Regional offices. The report does not list "equity initiatives" from all ten of EPA's regions. Is this indicative of the lack of equity problems in the regions not reporting or the lack of initiatives? The report failed to explain

these regional disparities. Will the agency's environmental equity thrust rely solely on voluntary actions of regional staff or will it be mandated across regions? Environmental equity is too important an issue to be left for voluntary action within the EPA. Equity goals must be integrated throughout the agency's programs.

Human
ENVIRONMENT CENTER

February 13, 1992

Memo To: Doretta Mitchum, EPA

From: Sharon Benjamin, Executive Director, Human Environment Center

RE: Comments on the draft report on "environmental equity"

First let me commend EPA on its efforts in beginning the hard work of dealing with "environmental equity" issues. As you may know, the Human Environment Center (HEC) has been active on these issues for well over 15 years and we know, from experience, that there are no easy answers to these issues.

EPA's report to the Administrator, Environmental Equity: Reducing Risk For All Communities, states that "environmental equity is important to the goal of achieving a more just society." We think that this is the only possible premise and we share this commitment, as HEC was founded in the belief that "sustained resource conservation simply cannot be achieved amid intolerable flagrant social and economic inequities."

In light of the Center's particular interests, I would like to comment on a number of topics related to the report.

Adults, Children and Environmental Equity:

As the report states, "Environmental equity is important to those who might bear disproportionately high risks" Unfortunately, the population that we believe to be most at risk is not even explicitly considered in the report.

The report makes no distinction between adults and children in the area of risk assessment. Although the report refers to the special needs of children relative to the risk of lead poisoning, you make no systemic statements regarding the disproportionate risks that children bear. There are at least four good reasons for developing better mechanisms for dealing with this:

- * Children are more sensitive to toxins as they eat, breathe, and drink more per unit of person than adults or the "average" person used in EPA's current risk models;
- * Very few federal laws specifically protect children, yet we know that in light of the above, children need more protection not less. EPA must remedy this situation;

- * By protecting children from undue risk we will be raising the threshold for all exposure rates, thus reducing the risks faced by whole communities, and finally;

- * As a moral society we have a responsibility to protect our children.

Geographic Breakout:

Further, we were disappointed that the report apparently didn't break information out on a geographic basis. While it addressed the problems of inequitable risks currently being borne by low-income and minority communities, far too little attention, in the draft, was paid to the special needs of urban communities. In 1972, HEC published Inner City Cancer Rates, which along with Ben Goldman's recent book, The Truth About Where You Live, clearly demonstrates that urban dwellers bear disproportionate shares of the environmental burden and have fewer resources for dealing with these problems.

Although Goldman's work has just been released, it should serve to inform EPA's working group on many of the issues raised in the report. One additional consideration: Goldman's work breaks data out on a county level by states. EPA could do a much better job of addressing inequitable environmental problems by using newly developed data bases which analyze neighborhood composition by race and income level and thus allows for more informed decisions.

Right-To-Know:

Another area that wasn't touched on in your report (in the Public Communication of Risk Section) is the information EPA collects through the Community-Right-to-Know Act -- the Toxic Release Inventory. This is an incredible wealth of information. Yet, in talking with local activists, it is clear that this effort is under-funded at the federal level. It is faster by eight to nine months to get this information from states. If EPA is serious about communicating risk, you must put more resources into this effort. Democracy is built on the premise that citizens can make informed judgements when given good information. EPA must make a bigger commitment to getting Toxic Release Inventory information into the hands of the public.

NASA's Mission To Planet Earth:

Finally, no mention is made of NASA's Mission to Planet Earth or Landsat, yet the information being developed by the program has been used to:

- * prove that a large pulp and paper company in the United States was responsible for the toxic sludge deposited at the bottom of Lake Champlain. Landsat "photographed" the exact location of the source of the sludge, and tracked its movement through the large lake to its point of rest on the other side. The company had denied responsibility, asserting that no one could prove the company was the source of the pollution.

* prove that asbestos-related tailings (tremolite and actinolite) released into Lake Superior from an iron recycling facility on the shore moved across the lake into the drinking water intake pipes on the lake at Duluth, Minnesota. Landsat imagery & aerial photographs played a vital role in confirming the flow of Lake currents, which carried the pollutants across the lake.

* prove that a plume of pollution drifted hundreds of miles through Lake Michigan into the drinking water supplies of Chicago. The plume contained phenols, ammonia and other dangerous substances, requiring frequent shut-off of Chicago's water intake valves. As a result, the proper steel plant was blamed for creating the plume and forced to correct its behavior. Skylab and aerial photography tracked the heated water in which the pollution was carried.

Clearly this diagnostic tool will be of great use to EPA staff in identifying environmental inequities.

We recognize that frameworks and paradigms for allocating scarce environmental resources must be developed. Risk assessment is one way of dealing with these difficult trade-offs. It is, however, an imperfect tool at best, and EPA must continue the process of improving both the science of risk assessment and the process of discussing the values inherent in implementing any science. As you know, these are life and death issues for many.

We look forward to working with you in the future.

Sharon Benjamin
for the
American Environment Center

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process can lead to frustration and anger on the part of the public.

